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TALK "NATURAL"

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OVER A QUARTER OF A CENTURY IN THE NATURAL GASOLINE INDUSTRY

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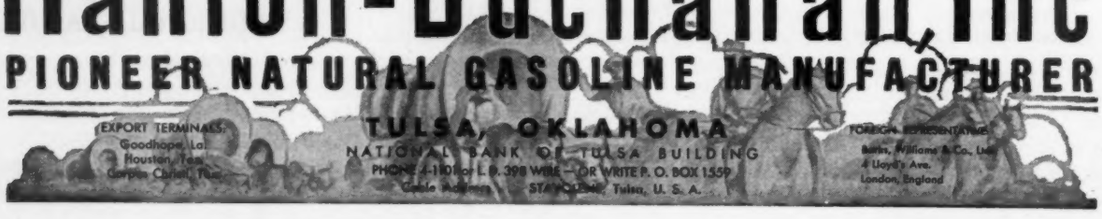
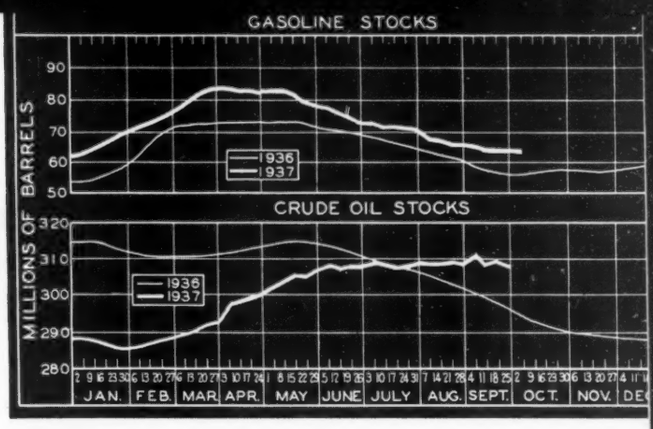




Substantial Production Decrease

THE 25-cent cut in Pennsylvania Grade crude oil made effective on Tuesday, October 12, could have had nothing to do with the general crude oil situation, as production fell off 55,894 barrels per day while the eastern oil buyers were making up their minds on the price situation. The 25-cent reduction was the result of local conditions. It follows a cut of from 22 to 25 cents made on September 1. There is evident need for a committee on regulation of production in that area to supplement the U. S. Bureau of Mines.

CRUDE PRODUCTION *3,589,582 barrels daily average—down 55,894 barrels.*

CRUDE STOCKS *307,974,000 barrels as of September 25—down 1,431,000 barrels.*

GASOLINE STOCKS *65,266,000 barrels as of October 2—down 354,000 barrels.*

REFINERY RUNS *3,400,000 barrels daily week of October 2—down 55,000.*

Texas was responsible for most of the reduction in crude output in the past week, production having been cut 39,701 barrels per day in that state. Louisiana, Kansas and New Mexico also contributed to the improvement in the general crude situation with substantial reductions. California operators as a whole paid no heed to recommendations of the Bureau of Mines and of their own committee of operators, and crowded the 700,000-barrel mark with crude output. California producers are the worst offenders in disregarding supply and demand, and reports from the Pacific Coastal fields give no promise of any change in their attitude in the immediate future.

The largest new wells of the week were reported from Crane County, Texas, where one well produced 11,576 barrels initially and another came in with a production of 6,360 barrels per day.

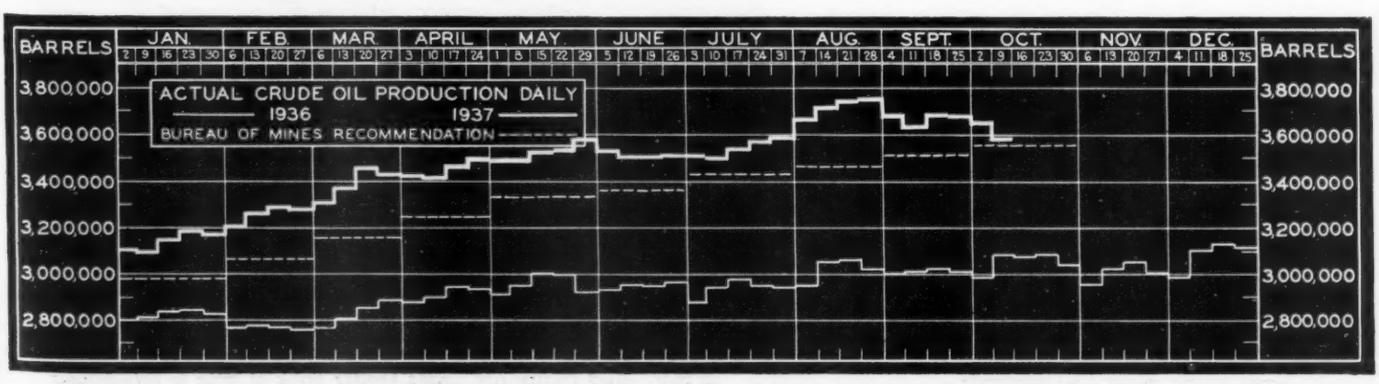
Columbia County, Arkansas, has prospects of an oil field at a depth around 7,200 feet, a porous formation containing oil having been reported in a test in that county, which adjoins Union County on the west. Union County is the seat of the Smackover, El Dorado and Schuler fields. No other important discoveries were reported in the course of the week, but numerous field extensions were made in several states and a large producer is reported in the Garland field in Wyoming. Important wildcat tests in western and eastern Texas were disappointments.

Refined oil markets are undergoing seasonal changes. Motor fuel is exhibiting the weakness produced by the usual falling off in consumption. Demand is holding up as well as could be expected with the vacation season ended. With the advent of cooler weather the past week has seen a smart pickup in the demand for light heating oils, but the heavy grade burning oils are less active owing to slight recession in industrial demand. Lubricants are spotty, with reports of scattered price-cutting. Natural gasoline is strong, with heavy contract movement.

Daily Average Production for Week

	Oct. 9 1937	Bur. Mines Oct. est.	Oct. state allowables	Oct. 2 1937
Oklahoma City	150,575	.....	.....	141,750
Fitts	70,225	.....	.....	74,325
Remainder of state	365,250	.....	.....	365,100
Total Oklahoma	586,050	629,200	600,000	581,175
East Texas	484,397	.....	.....	483,200
West Texas	212,550	.....	.....	220,850
North Central Texas	107,899	.....	.....	107,498
Texas Panhandle	65,447	.....	.....	79,950
East Central Texas	115,350	.....	.....	116,549
Gulf Coast—Texas	352,100	.....	.....	364,347
Southwest Texas	120,548	.....	.....	125,598
Total Texas	1,458,291	1,430,300	1,416,789	1,497,992
North Louisiana	76,785	.....	.....	89,660
Gulf Coast—Louisiana	171,147	.....	.....	174,650
Total Louisiana	247,932	254,600	266,700	264,310
California	699,750	660,000	660,000	689,750
Kansas	180,200	199,900	193,800	184,500
Arkansas	40,595	36,000	.....	38,700
Eastern fields	138,200	128,800	.....	137,600
Michigan	53,414	43,500	.....	54,619
New Mexico	104,060	106,400	104,000	114,560
Rocky Mountain area	81,090	79,400	.....	82,270
Total United States	3,589,582	3,568,100	.....	3,645,476

Decrease, 55,894 bbls. daily.



SPARKS FROM THE NEWS

GOOD INVESTMENT

Oil companies have been liberal in appropriating money for research and they have entrenched their competitive position as a result. This week the industry joins the Bureau of Mines in dedicating its new half-million dollar plant at Bartlesville, Okla.

MISDIRECTED

Herbert Morrison, British labor leader, broadcast to America Sunday an argument for an embargo on oil as the way to stop war. The Ethiopian experience might have suggested to him that broadcasting should begin at home.

CAR OUTPUT UP

Despite some anticipations of a slowing-down of new car purchases during 1938 manufacturers report the heaviest October car production schedules in history with November sure to top a year ago by about 100,000 units. New car production is a reflection of general buying power, later translated into new motor fuel consumption.

TECHNOLOGY GROWS

Technical sessions of engineering societies nowadays have reached a high standard of programs and one not versed in the science of the industry would be completely lost in the maze of scientific terms used.

INDIANA NEXT?

The oil industry is constantly on the move. Indiana now seems to be moving into the limelight for perusal by petroleum geologists and hard-fisted drillers alike. They will test the Corniferous. Illinois offered the inspiration.

EMPLOYMENT

One engineer reports it required about 15 carloads of equipment to drill and complete a modern oil well. To produce this equipment means work for thousands outside of the oil industry.

ANOTHER DROP

With crude oil production declining slowly it begins to look as though producers see the wisdom of curtailing output in anticipation of lower winter motor fuel demands.

SOVIET POTENTIAL

A geologist returning from U.S.S.R. reports that Russia has 1,000 potential oil fields, 45 developed and 350 partly tested.

HOOT MON!

The Standard Oil Co. will drill for oil in Scotland. It remains to be seen if the sands will be tighter there than elsewhere.

NO WASTAGE THERE

The Tioga and Potter County Oriskany sand gas fields in Pennsylvania are reported to have produced and marketed 141 billion feet of gas in 7½ years.

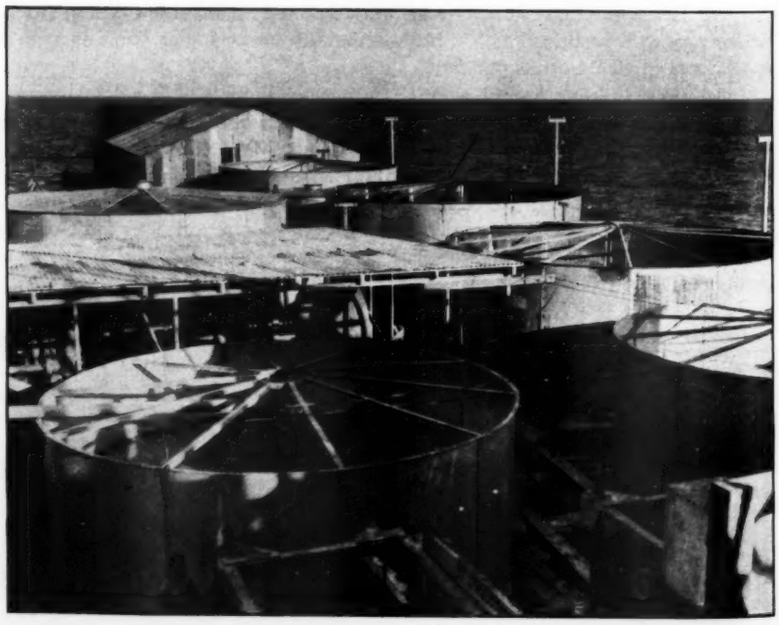
SLIDE RULE STATISTICS

Recent survey of enrollment in petroleum engineering courses in colleges and universities in this country indicates between 8,000 and 10,000 students now engaged in learning how to run the oil industry.

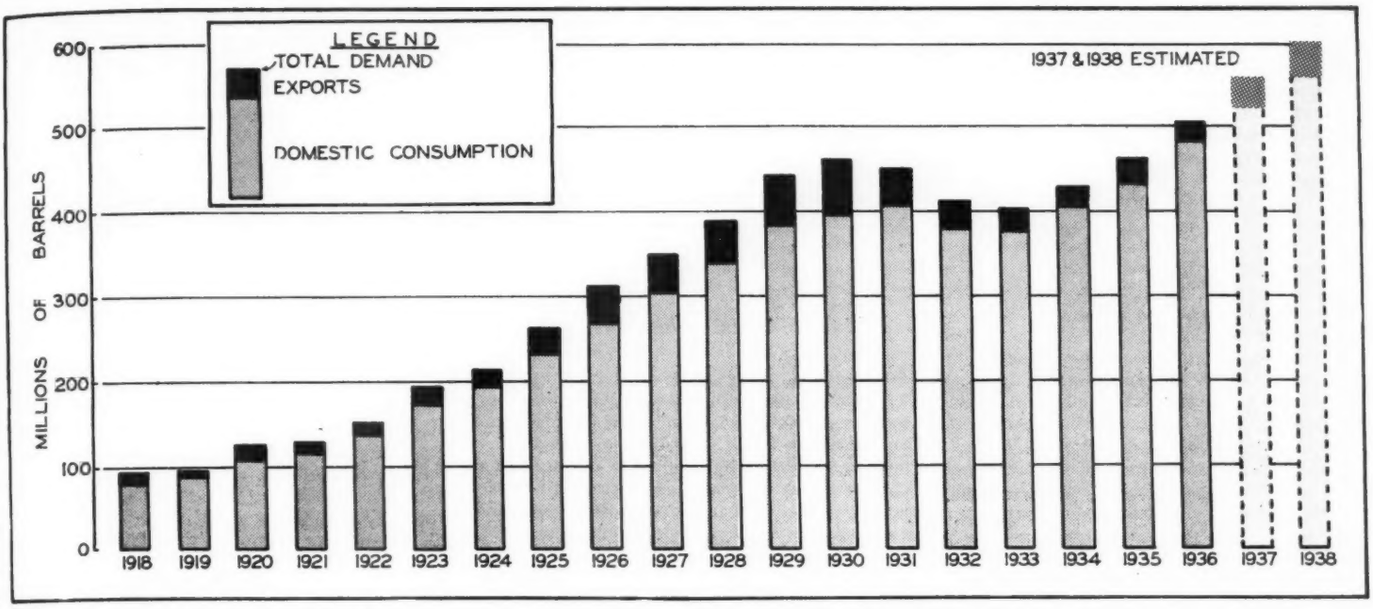
LESS OIL FOR LAMPS OF CHINA

Thanks to the Japanese blockade China's imports of American gasoline are one-third less while Japan's imports are two-thirds more than in the first half of 1936. Chinese imports of kerosene in the first half of this year were only one-fifth.

WILDCATTING OUT IN GULF



Looking down from derrick floor on steel tanks for mud, fuel and water storage on Superior Oil Co. wildcat test in Gulf of Mexico. Diesel engine power house in rear. Mud pumps are under shelter back of tank in foreground



Trend of domestic motor fuel consumption and exports annually since 1918 with estimates for this year and next year

New Motor Fuel Demand Peak Indicated for Coming Year

By C. O. WILLSON

Petroleum refiners in the United States can look forward to a gain of 30,000,000 to 40,000,000 bbls. in domestic motor fuel demand in 1938.

The enlarged refinery operations necessary to supply this peak in consumption will furnish an outlet for 65,000,000 to 86,000,000 bbls. of additional crude (between 180,000 to 240,000 bbls. daily), assuming there are no important increases or decreases in crude storage, during the year.

These data are based on reports of statisticians both within and outside of the industry who at this time of the year make preliminary estimates of probable future developments in petroleum supply and demand. In the case of motor fuels the several estimates for 1938 vary from 5.5 to 7.5 per cent over the present record-breaking year. All agree a new peak in domestic consumption of gasoline is assured for next year regardless of trends in general business or other possible developments which have a bearing on motor fuel demands. Their estimates, however, do reflect a wider variation than usual in interpreting the consumer data upon which the projected requirements are based.

It is emphasized that gains of 5.5 to 7.5 per cent in domestic motor fuel consumption do not mean petroleum producers can expect the same percentage increases in their outlets next year. Domestic crude oil production this year has been running about 500,000 bbls. daily or 16 per cent ahead of the same period in 1936. Approximately 90,000 bbls. daily of this year's domestic crude production so far has been going to storage, and to that extent current production has been excessive.

With this situation in mind, should there be no increase in crude storage next year, the actual gain in required output would be only 90,000 to 150,000 bbls. daily greater than this year's average domestic production. This means the industry's economists see a "flattening-out" in the supply curve after two years of sensational increases.

The foregoing is based entirely on domestic demands and supplies. Most statisticians prefer to wait until later in the year before they hazard predictions regarding export markets next year and the significance of possible changes in imports. This year's exports have averaged 438,600 bbls. daily, a gain of nearly 100,000 bbls. or 28 per cent over the same period last year. Should this upward trend continue at the same rate next year, obviously there will be a substantially greater gain in crude production and refinery operations of the United States than that indicated in the data covering domestic demands.

One company with large operations outside this country believes there will be a decline in exports of refinery products next year. The same concern is less optimistic than many others regarding domestic consumption of all products. In regard to exports it is contended part of the demand this year has been due to the war threat with which a large part of the world has been confronted. It is assumed a substantial part of the petroleum products purchased in this country went to storage in war preparations. It is felt this situation will not continue next year, with unsettled political and business conditions

Outlook for 1938

Domestic motor fuel demand will be 5.5 to 7.5 per cent greater than the record-breaking year now started on its last quarter. Between 30,000,000 and 40,000,000 barrels of additional gasoline will be required.

With no increases in storage, this motor fuel requirement points to an increased demand for domestic crude of from 180,000 to 240,000 barrels daily next year.

Heavy export shipments expected to continue with no important changes in imports.

Enlarged outlets for furnace oils, diesel fuels and burner oils and trend toward higher antiknock motor fuels may mean that gasoline yields from crude will not increase next year.

reducing the normal peace-time petroleum demands of many countries.

Others, also familiar with foreign markets, do not, however, agree with this view. They claim enlarged navies and other preparations for war have increased the demand for petroleum products and it is their contention the oil is being consumed currently. Most of the storage programs in Japan and several European countries, it is said, were completed last year or the early part of this year.

They explain the increased export demand this year as due largely to the fact the gain in petroleum supplies outside this country has not kept pace with the increases in demand. They point out that in the first six months of this year crude oil production outside the United States increased only 5 per cent. They conclude this gain was 2 or 3 per cent less than the increase in consumption, forcing many foreign buyers to return to this country for part of their supplies.

These observers do not see an important change in this comparative situation between foreign supplies and demand next year and feel confident exports will furnish as large a percentage of next year's total market as they have this year. Statisticians will have a better gauge on the export situation for next year after the September and October reports are available.

A factor of possible immediate importance in this situation is the Japanese-Chinese conflict. Japan is and has been for several years a large buyer of California crude and refinery products. A cessation of this business would be an important development for West Coast operators and would result in larger quantities being offered in other markets.

No important change in imports is anticipated next year. The present volume of imports is about the average of the past two years. A situation in which exports are increasing does not point to a condition which would bring about increased imports into this country with the existing excise taxes continuing in effect.

Domestic Estimates

The variations of 5½ to 7½ per cent in the estimated increases of motor fuel requirements next year reflect rather wide differences in opinion regarding probable business conditions. Interpretations of the significance of the recent break in stock market quotations as a business barometer are a factor in anticipated motor fuel demands.

The estimates of gains in motor fuel demand for 1937, made a year ago and at the start of the year, were in most cases around 7½ per cent. It is now certain the 1937 domestic gain will be about 10 per cent with a 25 per cent increase in exports. Largely, the same situation was true in 1935 regarding 1936, demonstrating again that in periods of business recovery and expanding markets, estimates of future requirements are generally low.

Unit Consumption

There is agreement the sharp increase in motor car production and gasoline consumption per unit will not continue. The low estimates of 5.5 per cent are based on the belief motor car production in 1938 will be less than in 1937 despite optimistic increases predicted by several car manufacturers. This, of course, does not mean there will be fewer cars on the highways and streets with a corresponding decline in gasoline requirements. Production of new cars will still exceed the number taken out of service with a record number in operation to start out the year. The decline in production, if it materializes, will tend to slow up the rate of increase of cars in service, and hence some statisticians believe the percentage of gain in motor fuel consumption will be about half what it was this year.

These observers also feel the increase in motor fuel consumption per unit will not show the gain it has the past four years. This consumption per unit is also directly tied in with general business conditions, various indexes being used in efforts to predict the gain which is almost as important in total motor fuel demand as the increase in number of units. It is felt the rapid expansion in business activity has ended with at least minor recessions assured for next year.

Those responsible for the estimates of 7 or more per cent for next year, however, are more optimistic regarding probable motor vehicle production and business conditions. They are projecting business conditions and car production at practically the same levels as this year. While not anticipating increases they are confident any recessions will be temporary and have little significance in motor fuel demands.

They point to the assured peak motor vehicle registrations of nearly 30,000,000 by the end of this year, a gain of about 1,800,000 over the previous year. With a liberal allowance for cars junked, it is estimated the year will start with close to 1,750,000 more cars in use than at the start of 1937. Some estimates are based on the assumption that 2,000,000 more units will be in operation during 1938 over the corresponding period of this year.

In transferring the 30,000,000 to 40,000,000 bbls. expected gain in motor fuel demand to crude oil requirements it was estimated that 1,000,000 bbls. of additional gasoline means 2,150,000 bbls. of crude oil. This takes into consideration the probable natural gasoline production, a small benzol output and crude consumed outside refineries and not accounted for in the refinery reports. This ratio is in line with actual developments so far this year. Domestic motor fuel consumption for this year is estimated at 525,000,000 bbls. with 35,000,000 bbls. for exports.

Exports

Estimating exports for 1938 the same as this year and the indicated total motor fuel demand (domestic demand plus exports) for next year is between 590,000,000 and 600,000,000 bbls. These totals are greater than the domestic crude oil production in 1922. They point to a crude oil demand in 1938 of between 1,325,000,000 and 1,346,000,000 bbls.

It will be noted no account is taken in these estimates of the demand for fuel oils and other petroleum products. It is assumed that the increased crude runs to still at refineries needed to supply the gasoline demand, will also take care of the enclosed outlets for other products.

Many economists have made studies of the rapidly expanding demand for petroleum fuels in an effort to give them their proper evaluation in estimating future requirements for crude oil. Particular attention is paid to the overhead distillates used as furnace oils, burner oils and diesel fuels. Latest figures show a gain of 20 per cent in the demand for these distillates this year.

This distillate demand and the efforts of refiners to increase octane ratings of motor fuels through reforming and other selective operations probably accounts for the fact that during the summer refinery yields of gasoline from crude were lower than in the same period last year. Due to this development, most statisticians are not expecting any increase in gasoline yields next year, thus ending a situation in which yearly gains of 1 to 2 per cent in yields have tended to reduce the gains in crude output required to supply large increases in gasoline demand.

Fuel Estimates

While admitting the fuel demands for petroleum have a direct bearing on market trends, for both crude oil and refinery products, several students doubt that accurate estimates of future requirements can be made and question the desirability of attempting to make provision for this outlet of a fraction of crude oil. They point to the fact that practically all of this fuel is potential gasoline through cracking operations and in its sale as fuel has competition in the form of natural gas, coal and other fuels.

This, in effect, means comparative price trends will ultimately determine the quantities of fuel oils required to serve the various fuel markets. Assuming a continued expansion in motor fuel requirements and a limitation in crude supplies, price advances will restrict the consumption to those consumers who can afford to pay for the superior performance of the oil fuels.

Winthrop G. Rockefeller; H. C. Wiess, president Humble Oil & Refining Co., and Orville Hardin, director Standard Oil Co. (N. J.) at launching of Standard Oil Co. (N. J.) tanker Wallace E. Pratt, sponsored by Miss Nancy Jane Pratt

Drilling First Test Out in Gulf Mile From Louisiana Shore

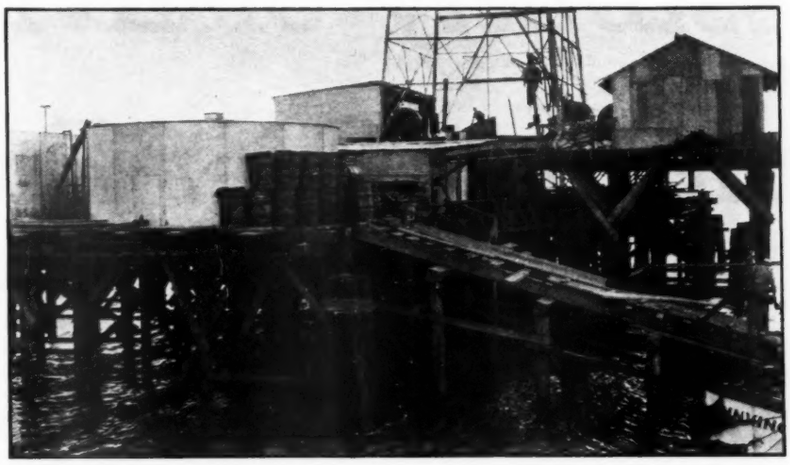
By NEIL WILLIAMS

HOUSTON, Tex., Oct. 11.—The first attempt to drill any of the prospective oil fields indicated as existing in the Gulf of Mexico along the Texas, Louisiana and Mississippi coast is under way by Superior Oil Co. and Pure Oil Co. off the shore of Cameron Parish, Louisiana.

For some time operators have been concerned with the possibility of developing oil fields in the Gulf but due to problems and hazards involved they have delayed such drilling until now. As the forerunner of several similar ventures expected to be undertaken at different places along the coast in the near future, the Superior test is regarded with particular significance.

Evidence of the presence of oil fields in the Gulf of Mexico has been given by pronounced seepages, observed by mariners since the earliest records, and in the past several years some of the larger companies have been engaged in geophysical exploration of the Gulf's floor for several miles out which has revealed favorable structural conditions at a number of places.

Recent surveys of the floor of the Gulf by the U. S. Coast and Geodetic Survey have brought out indications of possible fields. With these indications as the incentive, leasing of the floor of the Gulf as far out as the 3-mile limit has been under way at many places.



Close-up of Superior Oil Co. wildcat in the Gulf

Possible Hazards

Although the likelihood of important oil fields existing out in the Gulf has not been doubted, many operators have questioned the feasibility of developing fields so located, except those fields close enough to shore to permit operating from land. Devastating tropical storms and high, battering waves which occasionally strike the Gulf Coast region during certain periods of the year constitute serious hazards, and the costs involved in providing protection and carrying on the operations have been regarded as prohibitive.

Numerous tests have been drilled and several important fields have been developed under maritime conditions in bays, lakes and other water beds adjacent to the Gulf of Mexico along the Texas and Louisiana coast, mainly in Coastal Louisiana, but these have been in more or less protected locations. Probably the most exposed operations are those of the Texas Co. in the Caillou Island field at the mouth of Terrebonne Bay. However, there a shallow sand bar marshy island between it and the Gulf of Mexico proper affording something to break the full force of any storms or high waves.

Superior Oil Co. No. 1 Gulf of Mexico is a little over a mile from shore in the Gulf proper. With no protection from the seaward side, it is fully exposed to storms and tides. At this point, there is 13 feet of water at mean low tide with a thick deposition of silt and ooze on the bottom. The depth of the water reflects the extremely gradual dip of the floor of the Gulf. Excessive depths, except in few places, are not encountered off the Louisiana-Texas Coast for many miles out. This is expected to facilitate development for oil, although shallow water, which handicaps use of boats, frequently is a greater obstacle than deep water.

The well is being drilled from piling, approximately 310 feet long and about 150 feet wide. About 200 creosoted piles, ranging from 60 to 70 feet, were required. Total cost of this, exclusive of drilling equipment, was around $75,000. Due to the softness of the ocean floor, extreme trouble was encountered at first in providing a substantial base, even with the piling. The piling would sink its length almost of its own weight. However, just below the ooze is a thin stratum of hard clay pack, so heavy cross-pieces were secured on the piling at the desired height and with these resting on the clay pack sufficient support was provided. The structure is designed to withstand a 150-mile hurricane, and the highest waves.

Equipment Used

The platform covering the piling, on which the equipment is set up, is 12 feet above mean low water level, and about 9 feet above ordinary high water. The derrick floor stands 21 feet above mean low water level.

The steel derrick, 136 feet high, is set up on a regulation steel substructure. A large diesel-electric rig is being used. Three barges were required for all the equipment. The rig includes two 350-hp. diesel engines which drive the two electric generators, one for the motors operating the drawworks and the other the motors on the pumps. These are housed in a corrugated iron building at one end of the piling. A 1,200-ampere, 200-volt generator is provided for the pump motors, and a 1,000-ampere, 200-volt generator for the drawworks. Two 250-hp. motors operate the drawworks, while on the pumps are two 300-hp. motors. The generators are hooked up on a series switch so that when needed both generators can be utilized in supplying power for the drawworks. When coming out of the hole with pipe, the pumps can be shut down, and, with both generators on the drawworks motors, a total of 700 hp. can be provided for the load.

On the derrick floor are two drawworks. The 9½-inch drawworks for regular operation is driven by the electric motors while the smaller drawworks, provided for auxiliary uses, is driven by a gasoline motor.

In addition to the two generators, the rig includes two 174-ampere, 110-volt exciters which provide power for various uses about the rig, such as water pumps, lights, etc.

The set-up also includes two 250-bbl. steel tanks for suction mud pits, two 500-bbl. mud reserve tanks, one 500-bbl. water tank, one 500-bbl. fuel tank, and one 100-bbl. fuel tank. Mud can be pumped from any or all tanks. In the mud system are two vibrating screens. The mud house for storage of muds and chemicals is mounted on piling high above the level of the mud tanks so there is no danger of spray or moisture reaching it.

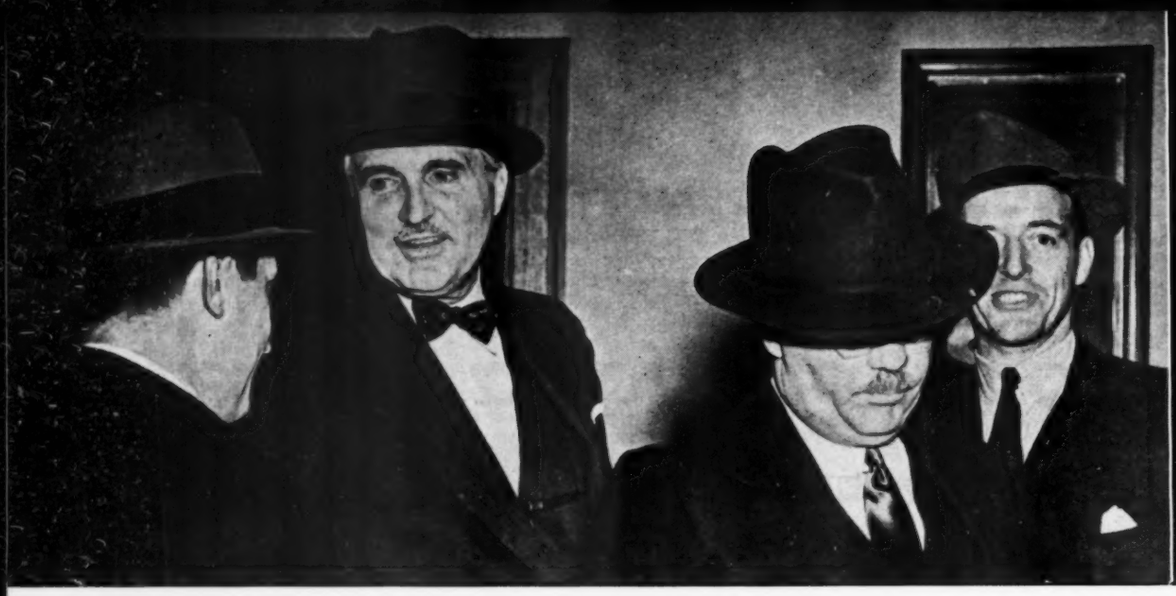
To provide fresh water for mixing mud, a water well is being drilled. Fresh water is expected to be obtained from a 700-foot level.

All tanks, as well as all other equipment, are securely strapped to the platform supports as a precaution against loss or damage during storms. Special attention also has been directed toward prevention of pollution of the water about the rig.

Drilling was started through a 24-inch conductor pipe, driven down into the floor of the Gulf to shut out the water. Two joints were used, reaching from near the derrick floor, through 13 feet of water into the bottom. Into the top of this was welded a mud return line.

Although only a little over a mile from shore, this test is accessible only by a 9-mile boat trip through the Gulf from Cameron, La., near the mouth of Calcasieu River at Calcasieu Pass. Cameron, about 50 miles south of Sulphur, is the nearest main highway and railroad point.

Supplies for the rig and crew are trucked or barged to Cameron, which serves as the base of operations. The crews board at Cameron, and make the trip back and forth to the rig each day. Using slow tug boats for transportation, the trips require from 1½ to 2 hours each way. Four crews are being used, each being on six days and off two.



H. W. Dodge, vice president, Texas Co.; C. E. Arnott, vice president, Socony-Vacuum Oil Co.; H. T. Ashton, Lubrite, and L. N. Treadwell, attorney for Socony-Vacuum; J. W. Carnes, vice president, Sinclair Refining Co.

Admissibility of Evidence Remains Chief Point at

MADISON, Wis., Oct. 12.—Scope of the defense to be permitted in the trial of oil companies under the antitrust act remained in doubt as the case entered its second week. The first government witness, an independent marketer, had undergone preliminary cross examination, subject to resumption after producing sales records subpoenaed from his Chicago office. A defense effort was made to break down his claim in support of the prosecution contention that an alleged conspiracy of the defendants to control the gasoline market had threatened the existence of thousands of jobbers and that he had encountered difficulty, during the 1935-36 period of the alleged conspiracy, in purchasing adequate supplies from independent refiners.

The vital element of the defense, however, remained to be tested later in the trial. The court has insisted that no evidence may be presented to the jury, without showing of written government approval, to support the defendants' contention that the buying program among independent refiners was in furtherance of the Roosevelt administration's purpose to stabilize the oil industry and conserve natural resources. At the outset Judge Patrick T. Stone had ruled that such a claim might not even be presented in the opening statement without advance showing of written authority, and had suggested that anything occurring during the NRA period prior to the alleged conspiracy would be immaterial.

Throughout a full day of his opening statement, however, Col. W. J. Donovan, chief defense counsel, had proceeded to pour the entire story of the petroleum code into the ears of the jurors.

By R. B. PYRE

On the next morning, before Mr. Donovan proceeded, and before the jury filed in, Judge Stone expressed surprise that the prosecution had not objected to the statement in view of his ruling.

William P. Crawford, special assistant to the attorney general, announced that the government, "at the proper time," would object to Mr. Donovan's statement in virtual entirety as improper under the limitations.

The court then announced that he would rule upon the admissibility of evidence as it arises, reiterating his stand that the defendants may introduce in testimony only those acts which had written approval during NRA days.

He warned Mr. Donovan against continuing to quote President Roosevelt in justification, declaring the defense knew as well as he that the president would not be a witness in the trial and that whatever he was quoted as saying could be only hearsay.

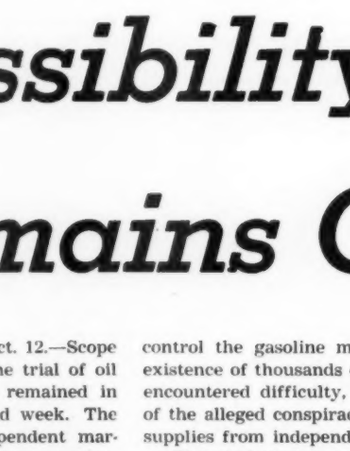
Mr. Donovan had quoted the president as having said, among other things, "conservation is vital. But it is not all. The petroleum industry is a large part of the whole of industry that must be stabilized so that those who are devoting their lives and fortunes to this large field of endeavor may share in the well-being of the nation, and in the opportunity to insure well-being by fair means of competition, just wages and working conditions, and fair prices."

The battle to limit Mr. Donovan's opening statement had centered upon a letter from Harold L. Ickes, secretary of the interior, to C. E. Arnott, alleged "master mind" of the conspiracy charged by the government, asking him, in July, 1934, as chairman of the Planning and Coordination Committee under the petroleum code, to organize local committees for stabilization of retail price levels.

Mr. Arnott, Mr. Donovan said, was successful in obtaining cooperation of elements which had precipitated the problem by cutting prices, and had

Veteran Wisconsin Writer To Cover Trial at Madison

R. P. Pyre, who has been engaged in newspaper and magazine writing in Wisconsin for 21 years, is reporting the Madison trial for The Oil and Gas Journal. Mr. Pyre is particularly well qualified to give an impartial report of the proceedings as they develop in one of the most important cases ever tried involving the federal antitrust acts. He has been in direct touch with the case from the time the grand jury investigations were started in May, 1936, and has reported all the important developments since. His reports will give an interpretative summary of the week's developments with detailed information on testimony and court rulings of special importance.



R. B. PYRE

Frank Phillips, president, Phillips Petroleum Co.; Allan Jackson, vice president; E. G. Seubert, president, and E. J. Bullock, vice president, Standard Oil Co., Indiana

for Defense

Madison

at least slowed up price wars if he did not succeed in halting them.

Having conveyed to the ears of the jury the purport though not the details of the Ickes letter, Mr. Donovan was permitted, upon resuming his statement after the warning from the bench, to describe "another vital element in the defense" in the form of another letter, from Louis Titus, attorney for Mr. Arnott's Planning and Coordination Committee. This letter, he told the jury, constituted a "complete protection to these men and their associates to engage in reasonable activities." He was permitted to mention the letter, though not its details, over a government objection that Mr. Titus was Mr. Arnott's personal attorney.

Contrary to what the government claims, Mr. Donovan insisted, the defense will show that the major companies did not go to the independent refiners with a proposal to purchase their surplus gasoline as a means of controlling the market, but that "the independents came to us for aid and thanked us for saving them from destruction."

The defense attorney charged that a class of jobbers who trafficked in "hot" oil was partly responsible for the prosecution, and declared the charge that the major companies tried to force the jobber out of business is untrue. The jobber is an important factor in the marketing end of the industry, he said, and without him most of the defendants could not properly market their product. There have been disagreements with some jobbers, he affirmed, but they were "jobbers who trafficked in 'hot' gasoline and profited by the demoralization of the industry.

"This kind of jobber fought the efforts of state and federal governments to stop the traffic in 'hot' oil," he continued. "They openly and brazenly lobbied against the administration's efforts to stop the illegal traffic."

The program of the major companies for purchase of distress gasoline at prices which would prevent demoralization of the industry resulting from the overproduction following discovery of the vast East Texas pool, was a continuation of the government's program. Mr. Donovan insisted, when it turned from compulsion, under the invalidated NRA code, to persuasion at a time when "something had to be done, and done quickly."

The first government witness was Carl O. Beroth, Chicago oil and gasoline broker identified as a director of two or more independent marketing associations whose complaints to the Department of Justice were disclosed as the basis of the investigation and indictment.

Mr. Beroth, who is president of Acme Petroleum Co., told of difficulty he encountered in purchasing gasoline from independent refiners during the period of the alleged conspiracy. During 1935 and 1936, he said, his company's attempts to buy supplies from companies with which he previously had done business were met by the general reply that they had sold large quantities of gasoline to the majors and "had none for us."

While testifying of his own experiences, Mr. Beroth was utilized by the government as a "background" witness to draw a general picture of the practices and processes in producing, refining and marketing of oil products. His testimony also was directed toward laying the groundwork of the government's charge that defendant journals aided in the conspiracy by publishing the prices the majors wanted them to publish. He declared the price quotations published by the Chicago Journal of Commerce during 1935 and 1936 ranged considerably higher than those at which he was able to buy gasoline, but he did not know, he said, how the journal's prices compared with those quoted by Platt's Oilgram and the National Petroleum News, the other indicted publications.

Bearing upon the government's charge that the alleged conspiracy, if carried to its contemplated conclusion, would have forced 4,000 jobbers out of business, Mr. Beroth testified his company now employs four buyers and sellers, a quarter of the number it once employed, and maintains two offices, whereas it formerly maintained four others. His testimony from his own memory in regard to the prices at which he was able to purchase in comparison with the Journal of Commerce quotations, drew repeated defense objections on grounds that in the absence of his own records and the files of the paper, attorneys had no basis for cross-examination, but they were uniformly overruled by the court.

Price Quotations

Declaring his company at times bought all the way from one-eighth to five-eighths of a cent under the low price quoted by the Journal of Commerce, he added that beginning in March, 1935, the prices published by the journal were from one-fourth and three-eighths up to five-eighths of a cent higher than the prices "we paid for U. S. motor and regular gasoline."

For months during 1935, he said, the journal's quotations remained practically unchanged, which had not occurred previously back to 1930.

In the severe winter of 1935-36, when motor traffic and gasoline consumption were curtailed, Mr. Beroth declared his company was able to buy gasoline "quite a bit" lower, while the journal's quotations remained practically stationary until

W. S. S. Rodgers, president, Texas Co.; Alexander Fraser, president Shell Petroleum Corp., and E. B. Reeser, president, Barnsdall Oil Co.

Acme Photos

mid-January when, he said, they suddenly jumped by about 6 cents.

Mr. Beroth was emphatic in his statement that his company never bought a carload of "hot" oil and maintained a rigid policy, to which its buyers were held strictly, requiring every bill of lading show the tender board stamp. He affirmed that the complaint which led to the investigation was filed with the Department of Justice by Paul Hadlick, secretary of the National Oil Marketers Association, as the result of numerous complaints from jobbers.

Cross Examination

Col. W. J. Donovan, chief of defense counsel, turned to Beroth's testimony concerning his unsuccessful efforts to purchase gasoline supplies sufficient to maintain a profitable volume at his broker margin of one-eighth to one-quarter of a cent a gallon.

"Isn't it a fact," he inquired, "that many independent refiners in late years have set up their own selling organizations?"

"That is a fact," Mr. Beroth replied.

"Then isn't that one reason why there has been a falling off in your business?" asked Col. Donovan.

"That would have its effect, yes sir," the broker replied. But he denied he had noticed any particular effect from competition of jobbers purchasing direct from refiners.

He didn't know, he admitted, whether or not the independent refiners from whom he had sought unsuccessfully to buy gasoline, and who were named one by one by Col. Donovan, were under federal tender. He didn't ask them, he admitted, explaining the uniform reason given him was that "we're sold up."

Testimony started after attorneys for the Gulf Oil companies had waived their opening statements.

Gen. Samuel T. Lawton, representing the Journal of Commerce and Keith Fanshier, its petroleum editor, insisted that the journal, in publishing prices paid by the defendant oil companies to independent refiners, also carried detailed news daily, "for all the world to read," regarding the majors' buying programs in the East Texas and Mid-Continent fields.

"Gentlemen," he told the jury, "that is not the way conspirators work."

During the spring of 1935, designated by the government as the early period of the alleged conspiracy, the journal published the news that some of the majors were taking over the surplus gasoline supplies of "specific refiners," the same refiners, Lawton pointed out, who were referred to "romantically" by the government as "dancing partners" of the supposed conspirators. The journal, he said, had no secrets from the public at any time, and explained every decrease or increase in gasoline prices and "everything that occurred." "If this be conspiracy," Lawton maintained, "then the Journal of Commerce made a public record of its guilt every day."

Similarly, Maurice Hanning, counsel for Platt's Oilgram and the National Petroleum News, was emphatic in denial his clients participated in any conspiracy.

"My defendants never sat in at any meeting with any other defendants," he said. "They never combined or conspired with anybody; they never entered into any agreement with anybody. The evidence will show that my defendants never published a false price from their origin to the present day. It is a mystery to us why we ever were indicted."

In his cross examination of Mr. Beroth, Colonel Donovan sought to show that many of the companies from which the broker previously had bought gasoline were unable to sell to him after March, 1935, because they could not comply with the Connally "hot" oil act and that some refiners found they could market directly through jobbers without the necessity of an extra middleman.

Mr. Beroth did not make a check of the refiners from whom he sought to buy in 1935 and 1936, as to whether or not they were under federal tender, he said, but he reiterated his presumption that "to the best of his knowledge" the companies with which he did business were complying with the proration laws.

"Peaks and Valleys"

Questioning Mr. Beroth on his description of the "peaks and valleys" that were frequent in gasoline price quotations prior to the long stabilized level of 1935, Mr. Donovan asked him if he knew whether any effective federal regulation, such as the Connally act, was in effect during the time when fluctuations were frequent. The witness said he did not, and when Mr. Donovan asked if he knew that the supply of gasoline had been reduced as a result of the Connally act he explained that he did not know how much gasoline was produced before the act went into effect in comparison with the production after its passage.

Mr. Donovan also sought to show, through Mr. Beroth, that refining companies had developed other outlets for their product as a partial explanation of the broker's purported inability to purchase supplies to meet his requirements.

Mr. Beroth could not recall a letter from the Wagner Refining Co. in May, 1934, notifying him that it had made "other arrangements" to handle its products, Mr. Donovan also asked if he did not know that the Rock Island Co. had developed its own jobber customers and "did not need your services."

"They knew you were not in business for your health, didn't they?" he suggested.

"That's right," Mr. Beroth declared.

Walter H. Wingrove, Sheboygan, Wis., jobber, president of the Wisconsin Petroleum Association, comprising about 300 jobbers, and a director of the National Oil Marketers Association, was the second witness for the government. He supported the prosecution claim that the major companies employ uniform contracts with jobbers. When he started business in 1931, he testified, he handled the product of Barnsdall Refineries, Inc., but in June, 1935, switched to Texas Co. But before deciding, he said, he consulted with representatives of Mid-Continent, Sinclair and other concerns, and all, he claimed, offered contracts identical in their basic provisions.

He said on cross examination, however, that the Barnsdall and Texas contracts differed in their marginal guarantees. In answer to questions by Colonel Donovan, he said various opportunities were offered to him as an inducement to switch to Texas gasoline, including a predominance of Texas outlets in his community which enabled him to expand his volume of sales by 20 to 25 per cent. A few moments later, on redirect examination, he testified his most profitable year was his first one, in 1931, when his volume of business was smallest. In his earlier years his margins averaged well above his minimum guarantee, he explained, but in recent years, though his volume increased, his margin has remained close to the minimum.

The uniformity of contracts among the majors, he said, was manifested in common use of the average between the high and low prices quoted by the Chicago Journal of Commerce as the basis of the price paid by the jobber to the supplier.

Admission of the two contracts was opposed by the defense, which held that uniformity of contract is no evidence of conspiracy, but after the contracts were admitted, the defense insisted the guarantee clauses be read, showing that jobbers were assured of a minimum margin of 5½ cents a gallon.

Mr. Wingrove explained his Barnsdall contract provided that if the going price of gasoline fell below the amount allowing him a 5½-cent margin the selling price should be reduced accordingly, and the difference set up as a debit against the jobber account, while if the margin exceeded 5½ cents the jobber was permitted to take half of the invoice difference up to three-eighths of a cent. The Texas contract was a "split contract," he explained, under which the jobber and supplier shared equally on any difference above the margin requirement.

At the opening of court today Judge Stone resumed efforts to obtain stipulations to expedite the case. Opposing counsel held conferences in an effort to reach a basis of stipulation, but it was reported little progress was made. Today Judge Stone suggested a stipulation that jobber contracts were similar in content. The defense declined to stipulate such an admission, however, insisting it will prove that the contracts were "very different."

Counsel for Defendants

Appearances of counsel for various defendant companies and individuals listed below:

General counsel: William J. Donovan, Herbert H. Thomas, J. Edward Lumbard, Jr., Ralstone R. Irvine, Granville Whittlesey, Jr., San W. Orr.

STANDARD OIL CO. (INDIANA), Edward G. Seubert, Allan Jackson, Edward J. Bullock, Ira A. Smith: Louis L. Stephens, Buell F. Jones, Weymouth Kirkland, David Fisher.

SOCONY-VACUUM OIL CO., INC., WADHAMS OIL CO., Charles L. Jones, H. T. Ashton, A. G. Maguire, R. R. Irwin, Bryan S. Reid, Charles E. Arnott: George V. Holton, Louis Mead Treadwell, Goldthwaite H. Dorr, J. H. Marshutz, Arthur F. Tripp, Jr.

CITIES SERVICE CO., Harry D. Frueauff: Theodore W. Brazeau, Charles A. Frueauff.

CITIES SERVICE EXPORT OIL CO., H. E. Brandli: Charles E. Gately.

EMPIRE OIL & REFINING CO., O. J. Tuttle: Emmert L. Wingert.

LOUISIANA OIL REFINING CORP., John A. Welch: Henry C. Walker, Jr., Walter Harris.

CONTINENTAL OIL CO., Dan Moran, Harry J. Kennedy, L. T. Cramer: William H. Zwick, James J. Cosgrove, Longstreet Hull.

PURE OIL CO., Henry M. Dawes, C. B. Watson, R H. McElroy, Jr., Dewey K. Chamberlain: J. C. Harvey, Charles I. Francis, Carl N. Hill.

SHELL PETROLEUM CORP., Alexander Fraser, P. E. Lakin: Samuel A. Mitchell, Truman Post Young, Ronald J. Foulis.

SINCLAIR REFINING CO., J. W. Carnes: C. T. Stanford, Roy T. Osborn, Frederick Wood, Robert N. Diggs.

TEXAS CO., W. S. S. Rodgers, R. D. Cottingham, H. W. Dodge, P. C. Scullin: Harry T. Klein, George W. Ray, Jr., S. A. L. Morgan.

TIDE WATER ASSOCIATED OIL CO., Edward L. Shea, Noel Robinson, J. W. Warner, R. O. Audrain: Rupert Thomas, Bethuel M. Webster.

MID-CONTINENT PETROLEUM CORP., Jacob France, Robert W. McDowell, Thomas Fitzgerald: J. C. Denton, John P. Greve, Richard H. Wills.

PHILLIPS PETROLEUM CO., Frank Phillips, Fred L. Koopman, H. A. Gardner, A. M. Hughes: John H. Kane, Amos L. Beatty, R. L. Foster, Walter L. Barnes.

SKELLY OIL CO., W. G. Skelly, James Nagle: W. P. Z. German, Alvin F. Molony, Cliff V. Peery.

BARNSDALL REFINING CORP., E. B. Reeser: William Dewey Loucks, John F. O'Ryan, E. C. Mead, Glenn W. Stephens, Perry A. Sletteland.

GLOBE OIL & REFINING CO. (OKLA.), GLOBE OIL & REFINING CO. (ILL.), GLOBE OIL & REFINING CO. (KANS.), I. A. O'Shaughnessy: Ralph Horween.

DEEP ROCK OIL CORP.: Edgar A. De Meules, H. P. Reynolds.

A. V. Bourque, C. M. Boggs: Ralph Horween.

Platt's Oilgram and National Petroleum News, Warren C. Platt: W. A. McAfee.

Government Attorneys

Following are the attorneys representing the government: William P. Crawford, John Henry, Hammond E. Chaffetz, W. B. Watson Snyder, Grant W. Kelleher, special assistants to the attorney general; Richard L. Bird, Jr., Nelson Sharfman, special attorneys; John J. Boyle, U. S. district attorney; Harold Hanson, assistant district attorney.

Posted Prices in Cheek Pool

Magnolia Petroleum Co., effective October 1, posted prices in the new Cheek pool in the Beaumont district, Coastal Texas, as follows: Below 21 degrees, 95 cents; 21 degrees 98 cents, with 3 cents added for each degree up to and including 26-26.9 degrees at $1.13 and then 2 cents added for each degree up to and including 31 degrees and above at $1.29.

Industry Joins With Bureau in Dedicating New Laboratories

By W. T. ZIEGENHAIN

The many oil executives and engineers who received an early training in the Bureau of Mines will join the present staff, in spirit at least, in dedicating the bureau's new half million dollar experimental station at Bartlesville, Okla., October 19 and 20.

These men are now scattered among almost as many fields as the oil industry itself but they never seem to forget the "bureau" and to them it is another alma mater.

Naturally, the chief interest of each lies in the division of the bureau in which he worked, whether out of Pittsburgh, Laramie, San Francisco, Dallas or some other station. However, because of the relatively long period during which the Bartlesville station has operated and because it was early designated as the "Petroleum" station, Bartlesville can probably claim a majority of these men as "graduates." Among the list are: A. W. Ambrose, I. N. Beall, C. E. Beecher, E. O. Bennett, F. M. Brewster, J. R. Bunn, J. H. Cable, L. P. Calkin, E. P. Campbell, R. M. Carr, R. A. Cattell, Joseph Chalmers, M. B. Cooke, J. S. Desmond, D. B. Dow, W. P. Dykema, F. A. Edson, R. H. Espach, H. C. Fowler, H. C. George, W. G. Hiatt, H. H. Hill, T. W. Johnson, L. C. Karrick, H. M. Kent, M J. Kirwan, A. J. Kraemer, B. A. Landry, F. W. Lane, H. P. Larkin, B. E. Lindsly, W. B. Lerch, J. O. Lewis, L. G. Marsh, W. S. Morris, R. Van A. Mills, R. O. Neal, I. H. Nelson, W. D. Nichols, L. A. Ogden, H. R. Pierce, E. L. Rawlins, C. E. Reistle, Jr., C. O. Rison, J. S. Ross, H. P. Rue, F. X. Schwarzenbek, K. C. Sclater, W. W. Scott, H. W. Shaner, C. H. Shapiro, H. B. Soyster, C. R. Swarts, T. E. Swigart, F. L. Swindell, R. R. Templeton, H. M. Thorne, J. E. Vandall, Gustav Wade, E. W. Wagy, Morgan Walker, J. W. Wakenhut, R. B. Werey, J. H. Wiggins, I. B. Williams, W. G. Wilson, L. D. Wosk, L. D. Wyant, and M. P. Youker.

It may be interesting to review a brief history of the Bartlesville station. It will further emphasize the effectiveness with which it has worked.

The plant had its beginning in 1918, at which time the secretary of the interior approved the station location as one of 10 to be established for research in mine problems. Five acres of land were donated by George B. Keeler for the station site and the two original buildings were donated by the Bartlesville Chamber of Commerce. The latter was accomplished largely through the efforts of C. E. Burlingame, its president, at that time.

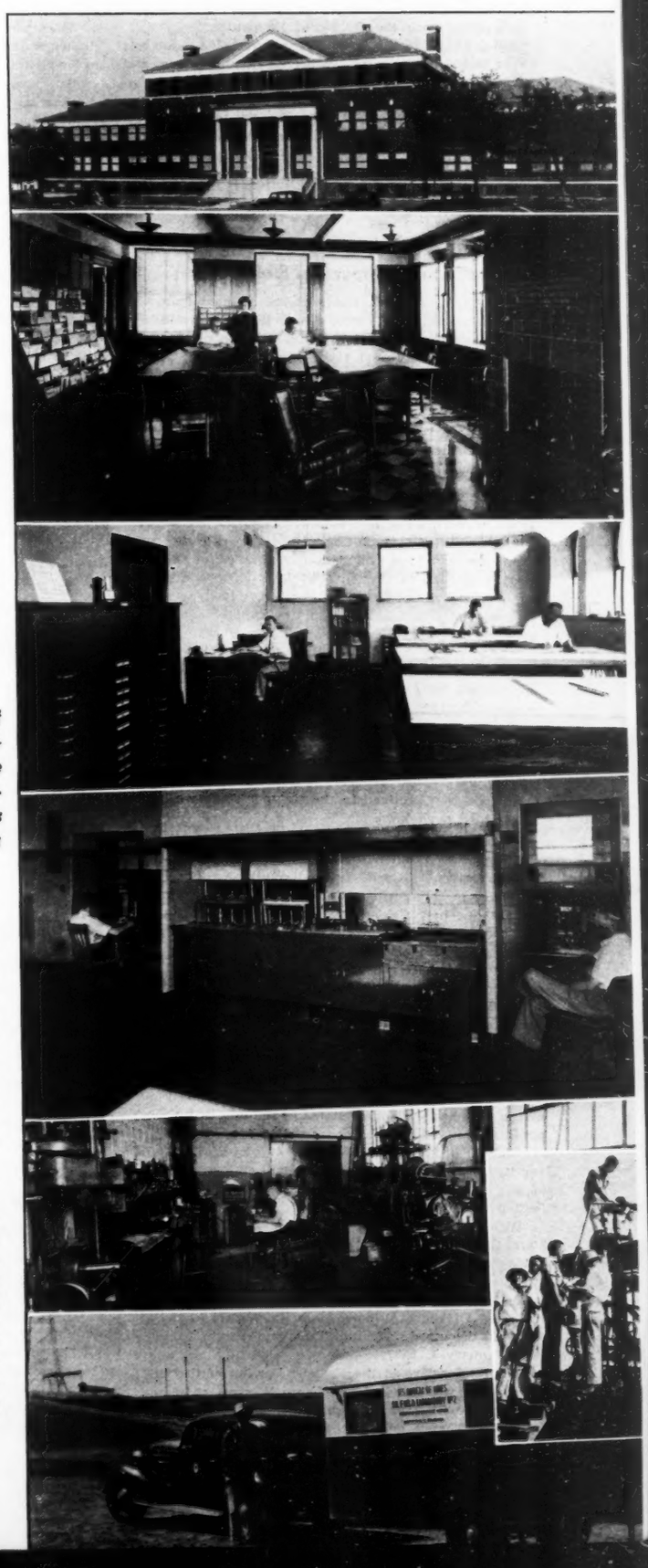
The station personnel consisted of three. Now the station has more than 60 employes. For the first few years the two buildings provided by the Chamber of Commerce were more than adequate, but as the station personnel grew it was necessary to provide additional space. In 1922 a sheet-iron garage was constructed, and the space in the laboratory building that had been used previously as a garage was made available for experimental work. In 1923 the petroleum laboratory was transferred to Bartlesville from Pittsburgh, Pa., where it was founded in the early days of the Bureau of Mines.

Almost from its establishment, the station has been maintained under cooperative agreements between the federal government and the state of Oklahoma. During the first 16 years of the station's life funds provided by congress and by the state legislature of Oklahoma have been available for the payment of salaries and operating expenses, as no provision was made for permanent improvements. In 1934 a program for permanent improvements was inaugurated.

The new building which has resulted represents approximately 80 per cent of the total station investment. The new building was designed to permit the use of the old administration building as a wing of the new. The central part of the building is 100 feet long and 50 feet wide, three stories high, with a basement. The new part of the building is entirely fireproof and has a reinforced concrete frame with a brick facing and tile lining.

The station is under the direct supervision of N. A. C. Smith, supervising engineer, who is responsible to the chief engineer of the Petroleum and Natural Gas Division in Washington for its efficient operation. Since the establishment of the station the following men held the position of superintendent or supervising engineer: J. O. Lewis, W. P. Dykema, A. W. Ambrose, H. H. Hill, T. E. Swigart, M. J. Kirwan, R. A. Cattell, W. W. Scott, E. P. Campbell, and now N. A. C. Smith.

The staff of the general laboratory has a threefold function: (1) to analyze samples of crude oils, natural gas, and oil field brines in accordance with Bureau of Mines methods; (2) to make periodical surveys of motor gasoline sold throughout the United States; and, (3) to make the chemical determinations and miscellaneous tests required in connection with the various problems being studied at the station.



Exterior and interior views of new station, including the library, drafting room, one of the testing laboratories and machine shop. The field work is exemplified by the test trailer and well crew

Record Attendance Expected to Hear Ickes at I.P.P.A. Annual Meeting

HOUSTON, Tex., Oct. 11—At the annual banquet of the Independent Petroleum Association of America held in the Rice Hotel, Friday evening, October 15, the main speaker will be Harold L. Ickes, secretary of the interior. The Columbia Broadcasting System has arranged to broadcast the address over its coast-to-coast network. The banquet is one of the important features of the annual meeting held in Houston this year in connection with the Oil-World Exposition.

According to C. E. Buchner, executive manager, over 18,000 invitations have been sent to members and from the response received it is estimated the greatest attendance yet secured will result. The headquarters for registration, conduct of business and holding of meetings will be the Rice Hotel. Special badges are being furnished by the Oil-World Exposition for the entire membership to enable each to attend the oil show without charge for admission.

The program for the annual meeting, extending over the three days of October 13 to 15, inclusive, will include discussions on topics of importance to the oil industry in general and to independent operators in particular. Speakers at all the sessions are men who have made a thorough study of the problems confronting the industry.

Since the maximum seating capacity for the annual dinner is only 1,500, it is expected there will be a shortage of seats.

The present officers of the Independent Petroleum Association are: Charles F. Roeser, president; H. B. Fell, executive vice president; Russell B. Brown, general counsel; T. J. Stewart, assistant to the president; and C. E. Buchner, executive manager who is in active charge of the meeting.

Illinois Mineral Conference Hears Several Timely Papers on Field

URBANA, Ill., Oct. 9.—Over 100 oil men from the Mid-Continent and Central West fields attended the two-day session of the Petroleum Division of the fifth annual Illinois Mineral Industries Conference, at the University of Illinois under the auspices of the Illinois State Geological Survey, October 8 and 9. Much greater interest was evidenced this year in the Petroleum Division of this mineral conference than previous years, due to the rapidly expanding activity throughout the Illinois Basin. Several timely papers were delivered of immediate interest to oil operators in Illinois.

William Bell, president of the Illinois-Indiana Petroleum Association, and Illinois representative on the Interstate Oil Compact Commission, opened the program by his address on "State Regulation of Oil and Gas Production to Prevent Physical Waste." Mr. Bell summarized Illinois' present position, which was particularly interesting in view of the rapidly increasing production from this state, as follows:

"Our treaty with the other oil-producing states binds us in effect to provide within a reasonable time, appropriate laws for accomplishing the purposes of the compact in this state in cooperation with the other states. The reason we now have no such laws is that when we had the large flush production here in the early part of the century, control measures of the present nature had never been dreamed of and since our production declined to the stripper stage we have not needed such laws.

"Now, however, that new fields are being developed and large wells found in Illinois, serious consideration must be given to these changed conditions. The high character of those who represent the producing interests in our new fields, leads us to believe that they will cooperate to protect the interests of the new fields closely along the lines set up by the Interstate Oil Compact and these other producing states. We feel we will have the very efficient support of our governor in obtaining conservation legislation similar in purpose to that enacted in other oil-producing states, through which will be protected the interests of the state, the industry and the public."

Robert E. Hardwicke, attorney from Fort Worth, Tex., led the discussion of Mr. Bell's address, speaking of the experience of other states in the enactment and application of oil and gas conservation laws.

Walter L. Summers, professor of law at the University of Illinois, delivered a very complete survey of his broad subject, "Changing Legal Concepts Affecting the Oil and Gas Industry."

Walter H. Voskuil, mineral economist in the Illinois State Geological Survey, delivered the closing paper Friday on "Economic Aspects of the Heating Oil Market."

Dr. Alfred H. Bell, geologist and head of the Oil and Gas Division, Illinois State Geological Survey, read and discussed slides on "Developments in Illinois Since January 1, 1937."

"Oil Exploration in the Eastern Portion of the Illinois Basin," was handled by Theron Wasson, chief geologist, Pure Oil Co., Chicago.

Paul D. Torrey, geologist, Sloan and Zook Co., covered "The Water-Flooding of Oil Sands," in a complete manner.

Frederick Squires, associate petroleum engineer, Illinois State Geological Survey, led the discussion of Mr. Torrey's paper, and concluded the session with his paper on "Recent Developments in Water-Flooding in Illinois Oil Fields."

Bureau of Mines August Report On Output and Demand

WASHINGTON, D. C., Oct. 11.—The Bureau of Mines reports the daily average production of crude petroleum in August amounted to 3,712,600 bbls., a gain of 141,000 bbls. over July, and 645,000 bbls. over August, 1936.

Production gains registered in the major producing districts of Texas, the bureau said, sent the daily average for the state over the 1,500,000-bbl. mark for the first time. The daily average production in the East Texas field amounted to 482,000 bbls., the highest since September, 1935.

Production gains in California, Oklahoma, New Mexico and Louisiana were reported to be relatively small.

The average daily output in Kansas, one of the major producing states, dropped from 207,300 bbls. in July to 201,000 bbls. in August.

The bureau noted the domestic demand for motor fuel did not come up to expectations in August. It was only 8 per cent above August, 1936. The yield of finished gasoline from crude in August was 43.2 per cent, the same as July.

Exports of motor fuel amounted to 3,771,000 bbls., the highest since May, 1932.

New Deep Production Showing In Southern Arkansas Wildcat

SHREVEPORT, La., Oct. 12.—Discovery of a new deep producing horizon in a wildcat area of Columbia County, southern Arkansas, 4 miles east of Stamps, appeared assured after a drill stem test at Standard of Louisiana No. 1 J. P. McKeen, section 8-16-22, showed oil.

With a total depth 7,204 feet, formation tester was run from 7,155 feet to bottom and the well showed 1,860 feet of 31.2-gravity oil along with some gas and 30 feet of mud.

Bottom-Hole Pressure Reduced In Texas Side of Rodessa

Average bottom-hole pressure in the Cass and Marion county sections of the Rodessa oil field showed a reduction of 107 pounds for the past month, according to proration figures of the Texas Railroad Commission for October. Average pressure for September was 1,772 pounds, compared to 1,879 pounds for August.

The bottom-hole pressure for the field, taken from the commission's contour map as of September 20, was 596,995 pounds, compared to 618,230 pounds for the preceding month.

Check on East Texas Factor In Hearing October 20

AUSTIN, Tex.—The Railroad Commission has called a statewide oil and gas proration hearing for October 20 in Austin. Interest will center on engineers' findings on bottom-hole pressure in the East Texas field.

Commissioner E. O. Thompson predicted that the check would assist in correcting the pressure decline situation.

Colonel Thompson said potential contour lines would be carried to the limit and the control map would chart each class of wells below the 20-bbl. marginal producing ability to 1 bbl. daily.

"This will obviate the allocating of allowable oil production to any well in excess of what it can actually produce," he said. "There will then be left no avenue or incentive to make up production of wells that fail to produce their allowable by producing a little additional oil from better wells on the lease."

"All fields in Texas, except East Texas, have had two such complete tests for gas-oil ratios within the past year," Colonel Thompson said. "So when this check of potential for East Texas is completed we will know within the limits of human ability the actual potential of each of the 75,000 wells in Texas.

"The average allowable production per well in Texas today is a little less than 19 bbls. But all our wells are producing their allowable and sharing ratably in the market. There are no wells in Texas that do not have some money income every day. It is not big but it is regular, steady and will be long lived."

The commission has ordered check valves be placed in flow lines of all wells where two or more are producing through a common line to aid in ascertaining the location of dead wells or those not capable of making their allowable.

The order was made effective October 15. A hearing was ordered for October 19 on an application for a rule change with reference to the cleaning of tanks and disposition of tank bottoms.

Texas Chief Justice Thinks Proration Principle Wrong

AUSTIN, Tex.—"I think the whole principle of oil proration is wrong," Chief Justice C. M. Cureton of the Texas Supreme Court said while questioning state counsel Harry Pollard in a suit involving a well drilled in East Texas as an exception to the spacing rule, which is being contested by Magnolia Petroleum Co. The well was permitted by the Railroad Commission to be drilled by Century Refining Co. The case submitted to the court involves validity of all the commission's spacing rules, and all lower court trials of spacing rule cases have been suspended pending a decision.

Judge Cureton said it was "idle" to talk about upholding or enforcing the law so long as there was no limitation upon drilling.

"It's nonsense to talk about enforcement if that is done." The "that" was the subdivision of property into smaller units than the spacing rule authorizes—one well to 10 acres.

Petroleum Division A.C.S. Meets Chicago Section

The Chicago section of the American Chemical Society will hold a joint meeting with the Petroleum Division at the Stevens Hotel in Chicago October 22, at which time Dean Frank C. Whitmore, president of American Chemical Society, will speak on "Hydrocarbons."

American members of the Institution of Petroleum Technologists will hold a dinner meeting at 6 p.m. on November 10 at the Stevens Hotel, during the American Petroleum Institute meeting.

Ranger Anniversary

RANGER, Tex.—Ranger will stage an elaborate celebration of the twentieth anniversary of the discovery of oil on October 21.

the OIL AND GAS JOURNAL

PRODUCING REFINING NATURAL GASOLINE PIPE LINE

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Two Conclusions

The article elsewhere in this issue of The Oil and Gas Journal analyzing preliminary calculations of the demand for petroleum and petroleum products next year is both reassuring and admonitory.

Two conclusions stand out: That the industry is assured of an increased demand regardless of what happens in other industries but that it cannot expect another large increase such as it had in 1936 and 1935.

The fact that the estimated total gasoline demand next year (domestic consumption plus exports) will be greater than the total domestic crude oil production 15 years ago is a startling measure of the industry's progress.

But it must be remembered that the total motor car production in the country between 1900 and 1921, inclusive, was less than 14,000,000 while in the past 15 years it has aggregated over 54,000,000. This period represented the real motorization of America in the popular purchase of cars and the general use of trucks and buses, an acceleration of new buyers not likely to be repeated.

The rapid increase in motor sales since the depression was caused by the accumulated market for replacements which is in process of being satisfied. With the return to normal growth in car production that sharp increase in gasoline consumption cannot be expected to continue. Production of new cars will still exceed the number taken off the roads and the demand for motor fuel will attain new peaks but perhaps not so sensationally.

But so far as 1938 is concerned, with an estimate of approximately 2,000,000 more cars in service, any slackening in the rate of increase in registration during the year is not likely to affect a normal gain in gasoline consumption. This means another record in motor fuel demand, an increase estimated between 30,000,000 and 40,000,000 barrels.

Current calculations of next year's domestic gasoline consumption range from an increase of 5½ per cent to an increase of 7½ per cent, compared to a domestic gain so far this year of 10 per cent and more than 25 per cent increase in exports.

There is some divergence of opinion as to whether the present rate of exports will be continued through 1938, some believing this year's increase was partly due to foreign accumulation as part of a preparedness program, while others think it due largely to supplies outside this country not having kept pace with demand.

Another factor is that the yearly gains in gasoline yields, which have lessened proportionately the increase in crude requirements, are likely to be checked by the increased demand for furnace oils, burner oils and diesel fuels.

It will be necessary to supply between 65,000,000 and 86,000,000 additional barrels of crude to meet the estimated increase in motor fuel demand in 1938, but, it must be remembered, we have added approximately 90,000 barrels to our crude stocks every day this year. So, to arrive at the figure which will reflect only the actual need for increased production next year, we must deduct the 90,000 barrels per day that have been stored.

In other words, excess crude production offsets a corresponding portion of gain in future demand. The overproducer cannot both eat his cake and have it.

The industry has had two years of gains in demand for petroleum products beyond all expectations, but crude production has exceeded even that. With a probable return to normal increase in ratio of demand for oil products there is all the more reason why the industry should reconsider its position and make the necessary adjustments.

The promised new peak in consumption next year assures continued progress which should not be jeopardized by unwise operations.

A. I. M. E. Meeting Exemplifies Trend in Oil Technology

By L. G. E. BIGNELL

To anyone who has not been privileged to witness the change that has taken place in the character of the papers presented and discussed at technical meetings of the various engineering societies the meeting of the Petroleum Division of the American Institute of Mining Engineers in Oklahoma City, Okla., October 7 and 8, would have been somewhat mystifying. To hear engineers, some of them young men recently graduated from colleges and universities, lead discussions on the properties of colloidal clays, the presence of connate water in oil reservoirs, the reservoir conditions of deep-seated gas and oil deposits, the economics of oil production and numerous other involved and intricate subjects, would have caused the inexperienced listener to wonder where all this knowledge had been acquired.

Trained Specialists

When it is considered that technical meetings have been held for 15 years by societies and associations interested in the various phases of the oil industry and throughout the past 20 years the petroleum engineer and technician has been delving into the problems of the industry it is not hard to realize how this development has taken place. However, it is within comparatively recent years that trained petroleum engineers have been graduated from the colleges and universities and have been so trained in special functions of the oil industry as to qualify as experts practically as soon as they received their diplomas. Many of these younger men are brilliant students and have had the background of careful training and education and when they have spent a relatively short time in the oil fields they acquire from the older engineers enough of the practical details to permit them to apply their specialized training to securing practical results.

Drilling muds have been problems ever since the rotary became standard equipment for drilling. Much has been written about the properties and characteristics of mud and admixtures to be used with native mud but it has been the job of the colloidal chemists working in the laboratory to point out the peculiar characteristics of clays and explain why they will gel in one instance and refuse to do so in another. Charles E. Reed, Massachusetts Institute of Technology, Cambridge, Mass., and a former student under Dr. W. K. Lewis, discussed "Gel Formation of Mud" in a very entertaining and instructive manner.

Programs Well Planned

Several other of the young speakers showed preparation and good speaking voices and when technical subjects are being discussed these qualities are appreciated by the audience. To follow a technical discussion requires considerable concentration on the part of the audience and when it is also necessary to strain to understand the speaker it is practically impossible to get much out of the paper. But, as a rule, the speakers before the technical meetings are now well qualified and with the loud speaker systems used in practically all meetings the audience can follow the proceedings comfortably. However, more than four papers for a session becomes tiresome and particularly so when the papers deal with unrelated subjects.

Most papers were presented in an abstract form and a few lantern slides shown. If several papers dealt with one subject discussion was withheld until all papers were presented for in many instances points raised by one author were answered by another paper. This procedure expedited delivery and permitted the maximum of accomplishment for all interested.

The program committee for the Oklahoma City meeting being conversant with these facts planned the papers so several of them at each technical session dealt with allied subjects. In the opening session W. N. Murray, University of Texas, Austin, Tex., discussed "Methods of Testing Oil Sands" and this was followed by a paper by P. P. Gregory, chief petroleum engineer, Yates Pool Advisory Committee, Iraan, Tex., on "Gas Caps and Methods of Determining Gas-Oil Contacts."

The next three papers dealt with the general subject of reservoir conditions and well spacing. A. J. Miles and Eugene A. Stephenson first discussed "Pressure Distribution in Producing Oil and Gas Reservoirs" and then William Hubbard, Humble Oil & Refining Co., Midland, Tex., led the discussion of "Economic Trends in Production," followed by L. L. Foley, consulting engineer, Tulsa, with a paper on "Spacing Oil Wells." These papers indicated the trend toward wider spacing and lower capital investments in drilling with higher ultimate recoveries of the reservoir contents.

Subjects Grouped

During the afternoon session of Thursday, E. Berl, of the Carnegie Institute of Technology, Pittsburgh, Pa., read an interesting paper upon the "Origin of Petroleum." This paper covered an exhaustive study and Doctor Berl drew some interesting conclusions which in time may find acceptance by the industry and explain some things now unsolved.

The next two papers had much in common, the first by R. J. Schilthus, Humble Oil & Refining Co., Houston, Tex., on "Connate Water in Oil Sands" and the other by Paul Weaver, Gulf Oil Corp., Houston, Tex., on "The Salinity of Waters in Buried Sediments." Both dealt with water in the reservoirs although these waters were probably of different origin but both occupy space and should be considered in estimating reserves and planning producing the wells.

Two highly technical papers followed. B. H. Sage and W. N. Lacey, California Institute of Technology, Pasadena, Calif., presented a paper on "The Effect of Pressure Upon the Viscosity of Air, Methane and Two Natural Gases," and E. N. Dunlap, Standard Oil Co. of California, followed with a discussion of "Flow Equilibria of Two Immiscible Liquids in Unconsolidated Sands." A discussion of "Stray Earth Currents" completed the first day's sessions.

The opening paper on Friday's program followed somewhat along the trend of the final paper of the first day's session. L. S. Reid and R. L. Huntington, University of Oklahoma, discussed "Steady and Unsteady Flow of Oil-Gas Mixtures Through Unconsolidated Sand." Paul Weaver was again called upon to discuss "Abnormal Pressures in Reservoirs," particularly in the Gulf Coast area, and H. C. Spoor, United Gas Co., Houston, Tex., followed with a paper discussing shut-in pressures on gas wells along the Gulf Coast. Both speakers stressed the close relationship between reservoir pressure and a pressure exerted by a column of salt water of a height equal to the depth of the formation below the surface.

Mud Qualities

The three following papers were on muds. Charles E. Reed discussed "Gel Formation in Mud." Benjamin C. Craft and Benjamin I. Routh, Louisiana State University, Baton Rouge, La., presented a paper on "Shear Strength of Muds," and H. E. Gross, University of Oklahoma, had the concluding paper on "Intensive Mud Weighting."

To conclude the technical sessions on Friday afternoon six papers were presented dealing in the main with high-pressure reservoirs. G. O. Kimmel and R. L. Huntington, University of Oklahoma, Norman, Okla., opened with a paper on "Stage Separation of Crude Oil-Gas Mixtures" and Eugene A. Stephenson, University of Kansas, Lawrence, Kans., followed with one on "Behavior of Contents of High-Pressure Reservoirs." Dr. D. L. Katz, University of Michigan, Ann Arbor, Mich., discussed "Use of Equilibrium Constants in Production Engineering" and presented a mass of data on this subject of particular interest to engineers dealing with modern production engineering problems.

S. E. Buckley, Humble Oil & Refining Co., Houston, Tex., had a paper on "Calculation of Equilibrium in Hydrocarbon Mixtures," dealing with gases in underground reservoirs under high pressures. Paul Weaver had pointed out the presence of salt water in many producing horizons and Gustav Egloff and E. F. Nelson, Universal Oil Products Co., Chicago, Ill., discussed "Desalting of Crude Oil" and told how salt may be removed from crude oils.

Another paper on oil treating was presented by S. F. Mauney, Jr., Carter Oil Co., Tulsa, dealing particularly with lease conditions and handling of cut oils.

Successful Meeting

More than 200 members of the institute and guests registered for the meetings and the attendance at each technical session was particularly good with practically everyone remaining throughout the entire session. Dean W. H. Carson acted as toastmaster for the banquet on Thursday night, the one social feature of the meeting, although there was a trip to Oklahoma City and Moore fields and to the School of Petroleum Engineering laboratories, University of Oklahoma, Norman, Okla., Saturday.

Here are some more of those
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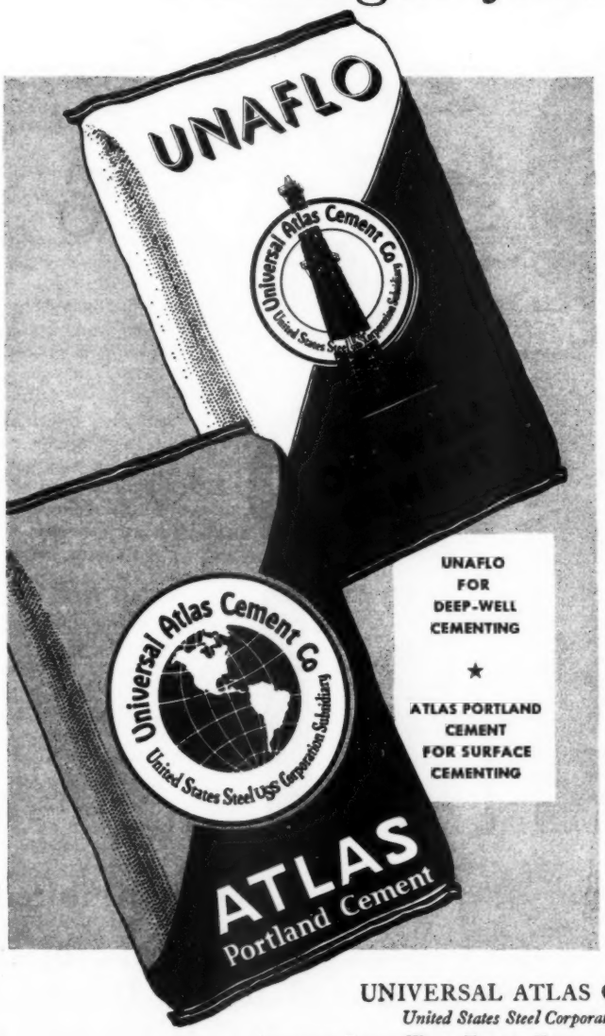

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Soviet Needing New Production Finds Results Disappointing

By WILLIAM J. KEMNITZER

Uneasiness concerning a sustained output of crude petroleum in the U.S.S.R. has grown only recently. Until the production of automotive units reached such a high figure and the refining capacity was enlarged, no anxiety was felt for the crude supply. With the accelerating expansion of these units, however, the position of crude oil production became noticeably inadequate.

As has been stated before, all that was deemed necessary to satisfy the increasing demand for motor fuels was to increase refinery capacity and efficiency. The production of crude petroleum was taken assuredly. When the oil fields were called upon to satisfy the crude oil needed, however, it was found that refinable grades of crude were incommensurate with refining plans. A large proportion of the crude oil available was either of too low gravity, too high sulfur content, or contained other impurities making refining difficult and expensive. Those in charge had evidently overlooked the fact that production in the old fields of Russia had declined to a stage of rank inefficiency; that to rejuvenate them was in many cases impossible; and that to develop new and sustained output would involve an element of risk requiring much more time, effort and money than to simply expand refining.

In cognizance of the necessity of increasing crude oil production, great effort has been made during the past 2½ years to find new fields, to explore for deeper sands in the old fields, and to increase generally the amount and efficiency of production. Commendable work in this direction has been done, but on the whole, results have been disappointing, and the outlook for easy and immediate success is not good.

The bulk of the crude oil production in the U.S.S.R. comes from the fields surrounding the Caucasus Mountains between the Black and Caspian seas. Here, the principal producing districts are the Azerbaidjan on the western shore of the Caspian; the northern Caucasus where the name implies; the Azvoc-Black Sea on the northern and eastern shores of the Black Sea; and the Georgian in the central and southern Caucasus. The fields of these districts produce at present nearly 95 per cent of the total output of the U.S.S.R.; and of these, the Azerbaidjan fields account for more than 77 per cent of the total. Those of the northern Caucasus contribute a little more than 12 per cent, those of the Azov-Black Sea 5 per cent; and those of Georgia less than 1 per cent. Each of these districts was producing commercial quantities of oil before the World War in 1913 except Georgia.

The remaining 5 per cent of the crude oil production of the Soviet Union comes from widely scattered fields in the eastern European section of the union, in the southern central Asian section, and the Far East. At present, about 1.5 per cent of the total output comes from the fields of the Bashkir district in the central Urals; about 1 per cent from those in the Kasakhstan district in the southern Urals; about 2 per cent from the fields in the Uzbek and Tadjik districts in southern central Asia and Turkmen on the eastern shores of the Caspian; less than 1 per cent from the Island of Sakhalin in the Far Eastern district; about 0.1 per cent from the fields in the northern district on the northwestern flank of the Urals; and less than 1 per cent from the fields of the Sverdlovsk district on the western flank of the central Urals. Of these districts, fields in Kazakhstan, Tadjik, Uzbek, and Turkmen were producing prior to 1913.

This is the fourth installment of Mr. Kemnitzer's article begun September 23.

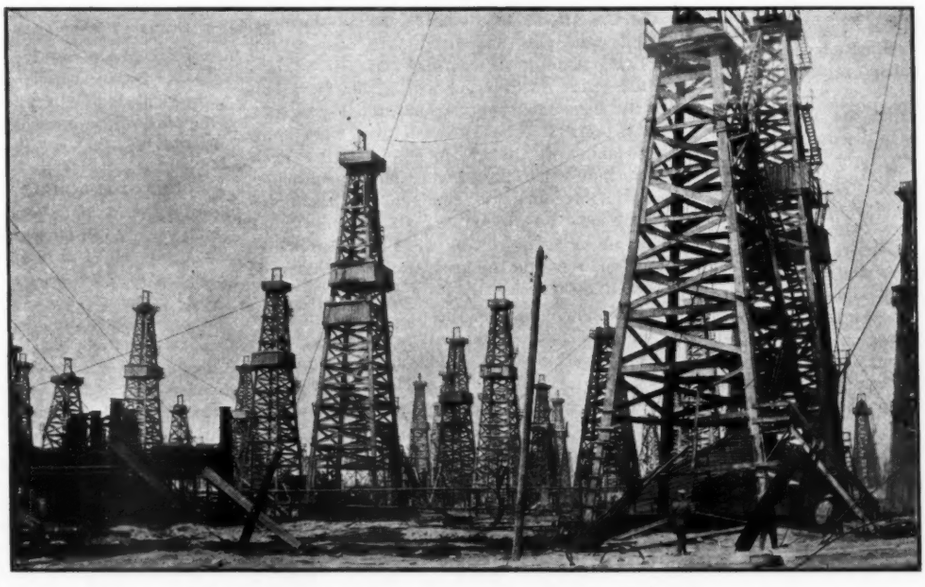
New Districts Small

In 1913, the total production of crude petroleum amounted to 7,699,100 tons. In 1935, total production (including natural gas converted to the crude-oil equivalent) was 26,795,000 tons, an increase of 3.5 times over the 1913 figure. In 1913, fields of the Caucasus region contributed 97 per cent of the total output. In 1935 they still contributed 95 per cent, indicating that the percentage of new production added during the 23 years intervening, through developments in entirely new districts, was very small.

The districts which produced all of the crude oil in 1913, produced 97.5 per cent of the total in 1935, indicating that most of the increased output has come from developments in the old districts. In other words, notwithstanding the effort to open up new districts, the older areas still account for the bulk of the oil. It may be argued that the old districts were only slightly developed in 1913, and that new discoveries in the old districts themselves account for much of the increase in output, a contention which is true. Nevertheless, not one single field of any notable size such as a Seminole, a Kettleman Hills, or an East Texas has been opened in the U.S.S.R. during the past 23 years.

The necessity of developing oil fields in new districts outside the older established ones was emphasized as early as 1934 by M. Stalin at the Seventeenth Party Congress. He stressed particularly the urgency of opening oil bases in the east along the southern and western flanks of the Urals. Here lie the principal new fields, in the Kazakhstan, Bashkir, Sverdlovsk, and Northern districts. (See map.) Although these fields at present contribute less than 5 per cent to the total output of crude petroleum in the U.S.S.R. the Soviet planners hope by the end of 1937 to increase that proportion to 18 per cent. To reach this figure, however, will be difficult if past results of prospecting and developing in these districts mean anything. It has been the frustrations of activities in the East which have forced those in charge to continue in the older districts surrounding the Caucasus, but they have high hopes for discoveries in the great petroliferous basin which lies between the Urals and the Volga.

In Kazakhstan northeast of the Caspian Sea, the Emba field has been one of the most disappointing. Here, productivity dropped 251,000 tons in 1927-1928 to 198,000 tons in 1933, and it has been only with great effort that the output has been revived to 272,000 tons in 1935. New discoveries have been made at Yazhnoe Iskine, Koschagyl, and Bachunas, but most of the development work has been based on the old reserves at Makat and Dossor, fields in which the known sands have already reached a state



Crowded section in the Balakhany field, Baku district

of decline. The area has long been handicapped by the lack of transportation facilities. The first section of the Guryev-Orsk pipe line was not started until 1935, and branch lines to the fields are just now building. The 118-mile branch pipe line to the Koschagyl field and a railroad along which to haul supplies will serve to open up this district in part, but much remains to be done before the district can be relied upon for a steady supply. Failure of the Emba supply, for example, would mean bringing Baku oil to the Orsk refinery an action which would cause complications due to differences in the qualities of the oils. Such drawbacks are not, however, to be taken as an indication of the lack of petroleum in this district because from a geological standpoint the region is one of great petroleum potentialities.

In Bashkir along the western slope of the South Urals, important discoveries have been made and developments taken place, notably at Ishimbaevo. Here, work was practically not started until 1935 although oil had long been known in the region. At present some 40 wells are yielding more than 1,000 tons of oil per day. A railroad and pipe line extend from the field to Ufa about 165 kilometers distant, where a refinery is being built. This district is expected to become one of the largest but undoubtedly development will be neither simple nor rapid.

In the Sverdlovsk district, on the western slope of the Middle Urals, oil was discovered in 1929 but production did not begin until 1932. The output has been small amounting to only 6,000 tons in 1932; and after reaching 14,000 tons in 1933 dropped to 8,000 tons in 1935. Hopes are high for a substantial output in this district. Considerable prospecting is going on, but the chances do not appear so good as in the Bashkir district to the south.

In the Northern district on the western slope of the North Urals, at Ukhatinski some production has been obtained since 1933. In this year approximately 8,000 tons were produced, and in 1935 nearly 27,000 tons are recorded. These deposits, although at present little developed are important as a supply for commercial and industrial activities in the north along the White Sea, especially in the Archangel district. Although probably not as potential from a geological standpoint as the districts in the south, they are, nevertheless substantial and quite important from an economic point of view.

In the Asian section of the U.S.S.R. developments have been slow except on Sakhalin Island. This slowness has been especially true in the Turkmenian Uzbekian, and Tadjikstan fields which, until completion of the Turk-Sib Railroad several years ago were without transportation facilities and almost isolated from areas of consumption. There appears little doubt that the Turkmenian district has the possibilities of becoming an important oil district. Its position on the southeastern shores of the Caspian Sea directly opposite the prolific fields of Baku and similar geology make it favorable, but here again lack of transportation facilities and remoteness from centers of consumption will make development slow and difficult. The output of the Uzbek and Tadjik has been small. Although of importance to the limited consumptive requirements of a remote region, the possibilities for a large output are considered not good. The production from Sakhalin has been quite substantial. The first output was in 1932 and at present the island is producing better than 300,000 tons annually. The possibilities here for a substantial output are good. The economic and "defense" importance of this district in the Far East is of obvious importance.

TABLE 14—PRODUCTION OF CRUDE PETROLEUM IN THE U.S.S.R., BY DISTRICTS, 1913 AND 1935 COMPARED

Field—	1913 M. tons	1913 Pct.	1935 M. tons	1935 Pct.
Azerbaidjan	7,669.1	83 1	20,707.1	77 4
Northern Caucasus	1,208.2	13 0	3,296.2	12 3
Azov-Black Sea	86.8	0 9	1,333.6	5 0
Georgian	....	0 0	7.4	(*)
Total	8,964.1	97 0	25,344.3	94 7
Bashkir	.....	.....	405.8	1 5
Kazakhstan	117.6	1 3	272.1	1 0
Far East	....	....	239.5	.8
Northern	....	....	26.7	.1
Uzbek, Tadjik, Turkmen	152.4	1 7	498.6	1 9
Sverdlovsk	....	....	8.0	.0003
Total	270.0	3 0	1,450.7	4 3
Total U.S.S.R.	9,234.1	100 0	26,795.0	100 0

*Less than 0.1 per cent.

The slowness and difficulty of developing oil in the districts outside the older ones has forced greater activity in the old fields, but in these also results have not been up to expectations despite the discovery of new fields and the opening up of deeper sands in old ones. A notable increase in production has taken place in the Azerbaidjan fields especially at Baku, and some improvement has occurred in the Azov-Black Sea territory, chiefly at Maikop, but the Northern Caucasus has been discouraging. Here, the famous old Grozny fields have proved the weakest point in the production of oil which has fallen off steadily, mainly because deep drilling has not yielded the good results of the Azerbaidjan fields (Baku, etc.).

The unanticipated slowness and difficulty of developing production in the new districts has also necessitated special attention to reconditioning old wells of small output many of which had been off production or abandoned. This work, however, has been greatly hampered because logs and drilling histories of old wells were either not available or were poor, making correlation inaccurate if not impossible. The poor mechanical condition of wells and the flooding of oil sands added to difficulties. Furthermore, much of the equipment and technical knowledge for this exacting task of rejuvinating old wells was lacking. Thus the problem of developing additional production in the old fields has been even more arduous than developing it in the new ones.

The number of commercially operated oil fields in the U.S.S.R. in 1935 was 41; today there are probably not more than 50. In 1935, deep drilling was being done at 72 localities. Outside of these localities were 81 wells on which work was temporarily suspended pending additional geological studies. At that time 650 structures were being studied and were thought to be oil-bearing. Probably not more than 20,000 wells have been drilled in the U.S.S.R. during all time, and of these about 8,000 are now on production. Only a very small proportion of the producing wells has been drilled below 3,000 feet and the great number of them do not reach 2,000 feet.

In the early stages of the first Five-Year Plan, foreign materials, equipment, and advice, principally American, were sought and used in connection with drilling and production. By the end of the First Plan, however, the importation of foreign pipes, rods, and other drilling material and machinery had almost completely stopped. After some technical advice and use of outside equipment the Soviets entered upon a policy of manufacturing their own material and of following the direction of their own talent in the exploration, development, and production of oil fields. Factories for manufacturing such highly specialized products, however, were either not equipped properly, or were taxed with other obligations precluding a ready and satisfactory supply. Technicians, with few exceptions, had neither the training nor experience to place operations on a par with those in the United States. Despite the fact that the petroleum industry was the first of all Soviet heavy industries to begin technical re-equipment, and was the first to take advantage of the best achievements of American technique, the industry itself has not progressed commensurate with the effort made. This paucity of progress can be traced in large measure to the cessation of foreign equipment and assistance, a matter which has become a disturbing factor in the fulfillment of the petroleum program.

About 1933, in apparent recognition of these inadequacies, the program for production underwent a change in policy. The amount of capital appropriated for research work and for the discovery of new oil-bearing districts was nearly doubled. At this time new orders were placed with foreign manufacturers to ease the strain on the Soviet metallurgical works. Later, a special commission composed of qualified technicians under the leadership of the Chief of Glavneft (the petroleum authority) toured the oil fields of the United States. This tour resulted in some constructive criticism by the commission of the petroleum industry in the Soviet Union, and a renewed determination to revamp the petroleum program with the view to increasing the efficiency of production. To date, nevertheless, no marked improvements have been made, and the Soviet petroleum industry appears to be suffering from the same deficiencies which began to beset it when they ceased to use the materials and advice of those farther advanced in the field of petroleum technology.

(To Be Continued)

OBITUARIES

CHARLES HORACE RATHBONE, oil prospector in the wildcat days of the eighties in Pennsylvania and later in Ohio, West Virginia and Mexico, died October 7 in New York City, where he had lived for 25 years. He was born in Hebron, Pa., March 4, 1853. In 1908, while general manager of the Pennsylvania Oil Co., he drilled the Dos Bocas well near San Diego, Mexico. It ignited when drilled in and the flame was visible for 200 miles. The Mexican government required three months to extinguish the fire.

DONALD McDONALD, secretary-treasurer of American Meter Co., New York, died October 8. His grandfather founded D. McDonald & Co., a gas meter factory at Albany, N. Y., in 1855. The business was carried on by Mr. McDonald's father which the deceased entered 51 years ago at the age of 17. He was a director of the American Gas Association in 1924 and 1925 and was on the committee which established a general testing laboratory in Cleveland. He was one of the founders and served in various capacities on the Gas Appliance and Equipment Manufacturers Association.

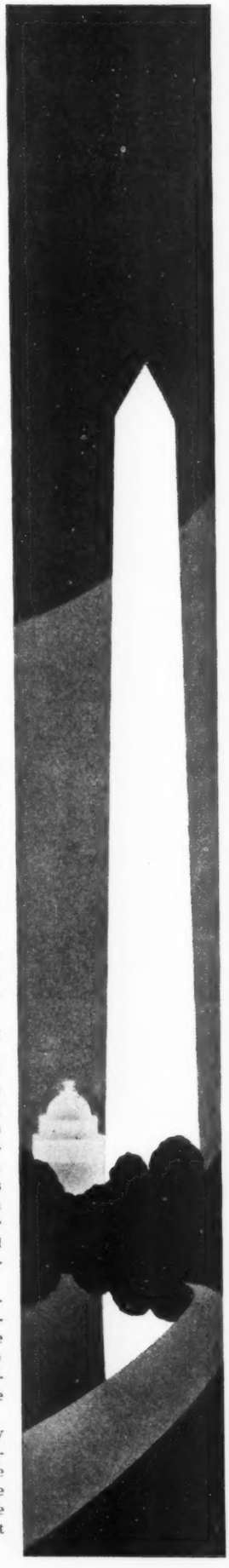
TABLE 13—PRODUCTION OF CRUDE PETROLEUM IN THE U.S.S.R., BY DISTRICTS, 1913, 1928, AND 1932 TO 1935, INCLUSIVE

(In thousands of metric tons)

Year—	Sverdlovsk	Bashkir	Azov-Black Sea	Northern Caucasus	Kazakhstan	Far Eastern	Northern	Azerbaidjan	Georgian	Uzbek	Turkmen	Tadjik	Total U.S.S.R.
1913	...	....	86 8	1,208 2	117 6	....	....	7,669.1	...	...	152.4	...	9,234.4
1928	...	...	107.1	3,690.5	251.0	....	....	7,664 2	...	17.7	7 8	10 9	11,749 2
1932	6.1	4.6	1,015.4	8,073.1	249.0	182.9	...	12,684.1	4.0	46.8	33.9	18 9	22,318.7
1933	14.4	21.9	766.0	5,060.3	198.1	196.4	7.7	15,981.5	5.3	35.8	154.7	15 9	22,458.0
1934	12 2	62.9	1,154.4	3,527.1	243.3	241.8	17.4	20,269.1	6.1	45.8	16.0	16.3	25,612.1
1935	8.0	405.8	1,333 6	3,296.2	272.1	239.5	26.7	20,707.1	7.4	....	498.6	....	26,795 0

Antitrust Policy Revision Administration Problem

By HENRY D. RALPH



WASHINGTON, D. C., Oct. 11.—The antitrust suit against oil companies being tried at Madison may be the last big case brought to trial under the Sherman act as it now stands. Other indictments and investigations now pending in the oil industry and perhaps a few other cases in other industries may be brought into court during the next few months, but the Madison case is very clearly leading to a show-down on the administration's antitrust policy.

The government is spending thousands of dollars under the Guffey coal act to force producers of another natural resource to abide by fixed prices and marketing programs, avoid cut-throat competition, and promote conservation.

Two laws enacted during the past year, Robinson-Patman and Tydings-Miller, are designed primarily to promote uniformity of prices and limit price competition, yet administration officials complain about identical bids submitted on government contracts. After an investigation of uniform steel prices last spring the Department of Justice concluded this was due to the basing-point system of pricing which was so well established nothing could be done about it under present laws, while at the same time the Federal Trade Commission brought antitrust complaints against the cement and cast iron pipe industries for using a basing-point system. The federal courts are now considering the case brought by the F.T.C. against Goodyear Tire Co. for selling tires to Sears, Roebuck & Co. at a price permitting Sears to undersell competing dealers, but only a week ago the government rejected all bids from regular tire suppliers and signed a large contract with Sears at a "cut" price and announced an antitrust investigation would be made into the matter of fixed tire prices.

The inconsistent policy of the government is further emphasized in its farm program where by various devices it is attempting to peg the prices of many commodities and is considering new laws to restrict and allocate production, whereas similar objectives carried out in the business world are branded as criminal acts. To revert to the oil industry, the federal government has given moral and legal support to state proration laws which allocate production and maintain the price of crude oil.

Court decisions have interpreted the Sherman act as permitting competitors to use an open-price filing system which tends to make prices uniform, and yet the government complains of antitrust violations when the use of such practices results in identical bids.

The situation just doesn't make sense. It must be stated, however, that the more thinking administration officials admit the whole picture is cock-eyed and that the government's policy on prices and business practices should be reoriented and redefined. Many of these officials have been trying for months to bring about a revision of the antitrust laws, but they cannot agree among themselves as to what should be done, and meanwhile the antitrust enforcers feel they must continue to apply the Sherman act as it stands.

There are three policies the administration can pursue on the problem of competition. It can enforce the antitrust laws strictly and literally, requiring intensive and even ruth less competition. It can give government approval to limited agreements among competitors to confine competition to a certain area and outlaw unfair and undesirable forms of competition. Or it can provide government control and government price-fixing for all industry on a pattern somewhat similar to the Guffey coal act.

To enforce the antitrust laws literally would be a Herculean task, enormously destructive and disruptive. A strict application of the Sherman act would practically outlaw all trade associations and even large mass-production business units. Such an application would have been difficult when the law was passed in 1890, but would be impossible now because the courts have narrowed its interpretation in many ways. In fact there are so many conflicting and even directly contradictory court interpretations of the Sherman act that no one, least of all the enforcing officials, knows whether or not a given course of business action will be adjudged illegal. Moreover, a strict enforcement of the law would mean a regime of ruthless and unrestricted competition, with the government protecting the chiseler and the price-cutter even though he committed economic suicide, wasted natural resources, and brought bankruptcy to his competitors. Such a policy certainly is not wanted by business, is contrary to the development of economic thought, and obviously is in conflict with the administration's policy toward agriculture and with New Deal concepts of a balanced economy and cooperative effort.

The second alternative, to give government sanction to voluntary trade practice agreements, has long been the favorite of most business men and many government officials. The Federal Trade Commission act was passed in 1914 with the idea of outlawing "unfair" methods of competition while protecting "fair" methods, though the law drew no line of demarcation between the two and the courts have had difficulty in doing so. The Federal Trade Commission for years has sponsored trade practice agreements, but without much success because such agreements never had any standing in law and the commission's policy toward them was always hesitant and weak-kneed. When Col. William J. Donovan, now chief defense counsel for the oil companies at Madison, was assistant attorney general he experimented with the idea of letting business men and trade associations submit their cooperative plans for advance interpretation of their legality, but he later complained that plans which looked proper on paper turned into illegal restraints of trade when put into practice, and he also was subjected to much public criticism for what was termed connivance at antitrust violations.

Finally the NRA gave business a short and hectic fling at attempting to make its own rules of competitive conduct. The argument will never be settled whether the ultimately unpopular and unworkable rules and price policies of the NRA codes were initiated by business men or were forced on them by the government, but in any event the New Dealers are firmly convinced the NRA experiment proved conclusively that business cannot be allowed to make up its own rules of conduct and that restraint of competition under codes of that sort is worse both for the public and for business than competition almost wholly unrestrained. If the New Deal ever sponsors anything that may vaguely be described as a revival of the NRA it will not include any such license for competitors to agree on price policies.

The third alternative, direct government control of business and prices, is frankly favored by a minority of administration advisers, but most of them fear to apply it to more than a few "sick" industries (such as agriculture and coal) because of the opposition from business generally, the enormous expense and responsibilities involved, and because of the charge that it would be a form of fascism or socialism.

So far President Roosevelt has listened sympathetically to the adherents of all three courses of action without indicating which he may be inclined to favor. Last April when the attorney general suggested a commission to study the whole problem of the antitrust laws and business competition the president declared something certainly would be done, but there has been no sign of action.

Oil-World Exposition Opened With Fitting Ceremonies

Officers and members of executive committee at opening ceremonies: Joe H. Russell, assistant to vice president, Gulf Oil Corp.; W. B. Sharp, president, Mission Manufacturing Co.; W. L. Childs, vice president, Reed Roller Bit Co., vice president of Exposition; John R. Suman, vice president, Humble Oil & Refining Co., and president Oil-World Exposition; Wallace Wilson, president, Wilson Supply Co., and vice president of association; J. S. Abercrombie, president, Abercrombie Oil Co., and vice president of association; Chase E. Sutton, division manager, Pure Oil Co., and executive vice president of association; George A. Hill, Jr., president Houston Oil Co.

HOUSTON, Tex., Oct. 11.—The opening of the Oil-World Exposition was officially observed with fitting ceremonies at which Frank Carothers, manager of Norvell-Wilder Supply Co., officiated. Following an invocation by Lieut. James T. Wilson, chaplain of the Second Division, Fort Sam Houston, San Antonio, and vocal solos by M. V. Starks, purchasing agent, Mission Manufacturing Co., Mayor R. H. Fonville of Houston delivered an address welcoming the exposition visitors and paying tribute to the oil industry of Houston. Chase E. Sutton, division manager of the Pure Oil Co. and executive vice president of the exposition, responded. Other speakers were James Anderson, vice president of Humble Oil & Refining Co., and president of the Houston Chamber of Commerce, and Albert Thomas, representative to congress.

Mr. Thomas told the show visitors he hoped the day never would come when the government would take over direction of the oil industry declaring he was certain the oil industry was able to direct its own affairs.

Following Mr. Thomas' address officers and members of the executive committee of the exposition were introduced by Mr. Carothers, following which fitting tribute was paid Ed G. Lenzner, general manager of the show, for his efforts.

In recognition of the services of John R. Suman, vice president of the Humble Oil & Refining Co. and president of the exposition, George A. Hill, Jr., president of Houston Oil Co. and vice president of the exposition, presented a silver tray to Mr. Suman as a gift of the directors for the exposition. At the ceremonies, all directors and officers of the exposition, sat in a body.

New Marketing Rules Are Posted By Texas Co. and Subsidiary

NEW YORK, Oct. 12.—Rules and policies covering vital phases of petroleum marketing were enunciated by Texas Co. and its affiliate, Indian Refining Co., in a bulletin posted last week at all bulk plants and terminals. The notice said "the policies will be deviated from only when necessary to defend our business from competition."

The bulletin states that the company will post at its bulk plants its selling schedule from which there will be no deviation, except for government business. The company has made arrangements whereby certain pump companies will sell new gasoline pumps on extended terms at $5 per pump per month, including interest and carrying charges. The cost of installing, repairing, or removing pumps to be paid by the dealer. No pumps will be loaned to dealers or commercial consumers and all other equipment will be purchased by the dealer.

On taking over a dealer from a competitor, the company will continue purchasing from the competitor all of the equipment at the location, or may replace such equipment with equipment of like age and conditions, unless the dealer purchases new equipment.

The company will not be a party to the breaking of any contract a dealer has with a competitor, either directly or through subterfuge. It will not lease any location where competitive products are being dispensed. At new service stations, where petroleum products have not been previously sold, the company will consider a lease on a third party basis only.

The company will not make loans to its dealers nor improvements to dealer locations, such as furnishing lifts, improving driveways, curb cuts, etc., and will not pay any privilege or license taxes for dealers. It will not pay any dealer an allowance for hauling his purchases from the company's bulk plants, terminals or refineries. It will not sell any new peddlers, jobbers, or wholesalers who deliver to dealers in territory served by present bulk stations of the company. The company will not make any retail sales at its bulk plants.

In taking over a dealer from a competitor, the company will paint out signs in colors of the competitor and repaint in its own colors. It will supply its usual signs, globes and other advertising material, but will not pay any sign rental for display of company advertising at the dealer's place of business.

Texas Mid-Continent Oil And Gas Association

DALLAS, Tex. — Matthew S. Sloan, chairman and president of the Missouri-Kansas-Texas Railroad, will be the principal speaker at the annual convention of the Texas Mid-Continent Oil & Gas Association, to be held here October 29 and 30, according to E. L. Smith, chairman of the general arrangements committee.

A large attendance of oil operators is expected. President Jake L. Hamon will preside as chairman. A feature will be presentation of distinguished service awards to those who have performed outstanding service to the Texas oil industry.

Cities Service Takes Control Of Warner-Quinlan Stations

NEW YORK, Oct. 12.—Cities Service Oil Co. assumed control October 1 of all service stations formerly operated by Warner-Quinlan Co., consummating a reorganization arrangement involving one of the important eastern marketing properties.

Cities Service acquired control of the Warner-Quinlan service stations on a bid of $4,180,750, subject to mortgages of $1,950,000 approved August 24 by Federal Judge Murray Hulbert.

THE MARKETS*

CRUDE OIL: *Production in the United States declined 55,894 bbls. per day in the past week, Texas having been responsible for the greater part of the decline with assistance from Kansas, Louisiana and New Mexico. California again showed an increase. The decline of last week and the week before totals 77,519 bbls. per day.*

REFINERY: *Gasoline less steady, with prices of low-octane material lower. Higher-octane grades off in some areas. Burning oils stronger, except in the heavy industrial grades. Lubricant group softer.*

TANK-WAGON AND SERVICE STATION: *No changes of importance reported.*

FINANCIAL: *Oil company shares continued their slump in price. Average for 30 representative stocks for the week ending October 9: High, 34.54; low, 31.62; close, 32.40. Week ending October 2: High, 34.88; low, 31.98; close, 34.28.*

**Details in market section.*

Orders for Oil Burners Show Continuing Gain for This Year

NEW YORK, Oct. 12.—Heavy fuel oil burner orders for August, less cancellations, totaled 23,479 compared to 16,274 in July and to 22,347 in August, 1936. For the first eight months of 1937 the heavy fuel oil burner orders totaled 118,821 compared to 102,442 for the same period in 1936, an increase of nearly 14 per cent.

New orders for distillate oil burners in August totaled 48,059 compared to 45,708 for August last year and with 33,640 for July, 1937. The new business in August boosted orders for 1937 to 208,004 compared to 157,771 for the same period a year ago, more than 24 per cent gain.

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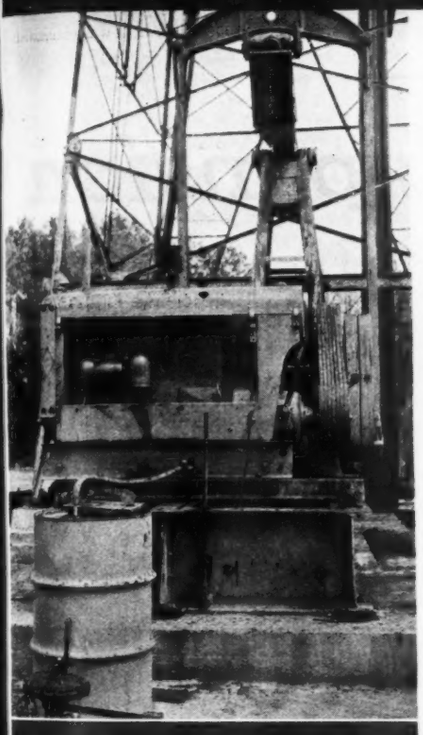
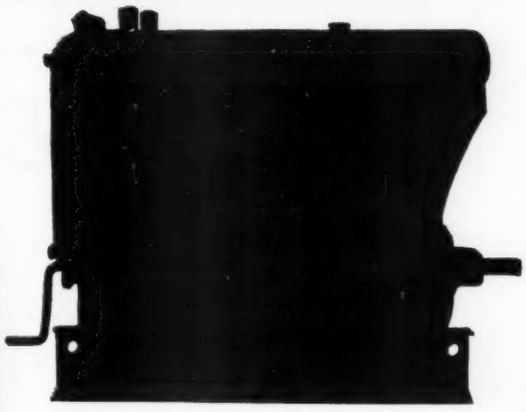
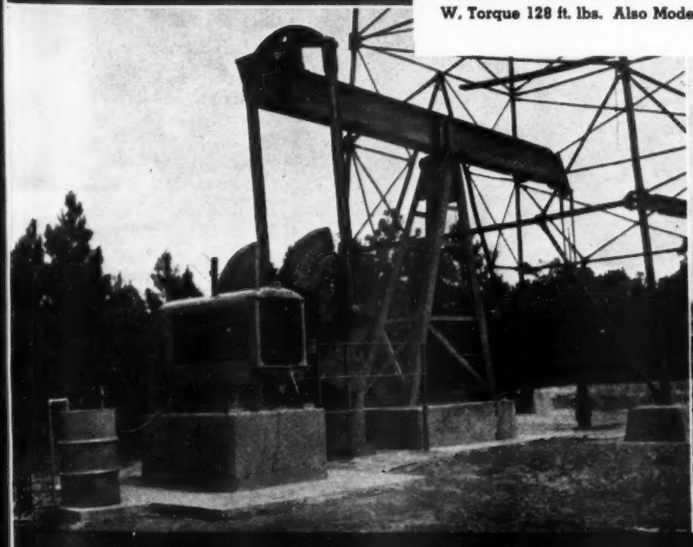




Model U Power Unit

The most popular medium size power engine in the Mid-Continent fields because production records show that this unit, for its power, requires a minimum of maintenance — less cost per barrel lifted. It burns natural gas or gasoline with equal efficiency, can be equipped with pistons for burning low grade tractor fuels at no additional charge. Four cylinders, 4½" bore, 5" stroke. Motor operating speed 600 to 1400 r.p.m. Torque 200 ft. lbs.

There are four A-C Power Units. Model L, Torque 550 ft. lbs. Model E, Torque 375 ft. lbs. Model U, Torque 200 ft. lbs. Model W, Torque 128 ft. lbs. Also Models LO and EO Oil Engines.



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Natural Gas News

St. Louis Hearing on Petition For All Natural Gas

Possibility of 100 per cent natural gas for St. Louis, Mo., will be studied during a hearing by the Missouri Public Service Commission in November, as a result of a petition filed by the city asking that the Laclede Gas Light Co. serve all natural gas instead of a combination of natural and manufactured gas. A valuation of $39,000,000 and a return of 6½ per cent for the Laclede Gas Light Co., a 6 per cent reduction in gas rates and return to gas customers of an impounded fund approximating $800,000 were recently sanctioned in a ruling of the Missouri supreme court affirming an order of the Missouri Public Service Commission.

Two California Companies Ask Permit to Merge

LOS ANGELES, Calif.—Two gas companies have applied to the State Railroad Commission for authorization to merge, Coast Counties Gas & Electric Co. and Natural Gas Corp. of California. The Coast Counties company serves communities in the Contra Costa, San Benito, Santa Cruz and Santa Clara counties. Natural Gas Corp. serves communities in Kern, Imperial and Siskiyou counties.

Negotiations by the Pacific Gas & Electric Co. to acquire from Natural Gas Corp. its butane plants at Rio Vista, Isleton, Vacaville, Suisun and Fairfield are reported under way.

El Paso Natural Gas Co. Twelve Months' Income

Report of El Paso Natural Gas Co. and subsidiaries for 12 months ended August 31, 1937, subject to audit and year-end adjustments, shows net income of $1,618,369 after federal income taxes, interest, amortization, provision for retirements, etc., equivalent after dividend requirements of $103,579 on 7 per cent preferred stock to $2.58 a share (par $3) on 587,151 shares of common stock outstanding.

Michigan Reserve Estimate

SAGINAW, Mich.—New and spectacularly high estimates of Michigan's reserves of natural gas were written into the records of the Michigan Public Utilities Commission in the testimony of Charles W. Miller, Detroit engineer, appearing as a witness in behalf of a group of independent Michigan gas producers protesting against the request of the Washtenaw Gas Co. of Ann Arbor for permission to tap the Texas-Detroit gas line.

Mr. Miller's estimate of the state's gas reserves was placed at 402,796,546,327 feet, more than double the highest previous estimate—200,000,000,000 feet, made by E. J. Lieber, a producer. The Bureau of Mines estimate is 101,590,000,000 feet. Gas company engineers have estimated Michigan's reserves at between 70,000,000,000 and 100,000,000,000 feet.

Mr. Miller assured the utilities commission that Michigan's reserves are sufficient to guarantee a 24-year supply of natural gas for Flint, Pontiac, Ann Arbor and Ypsilanti in addition to the present natural gas users, Saginaw, Lansing, Grand Rapids, Bay City, Mount Pleasant, Midland and Clare.

Long Lake Gas Hearing

AUSTIN, Tex.—A hearing on rules to prevent waste of natural gas in the Long Lake field of Anderson County was set by the Railroad Commission for October 28. Operators of gas wells requested the hearing.

Rules governing the taking of potentials in the Amelia pool in Jefferson County were revised in a special order by the commission. Instead of 24-hour tests through one-quarter inch choke 6 inches long on flowing wells, the commission ordered six-hour tests with the 24-hour rate to be computed on the second three-hour gauge. Potentials of pumping wells were ordered taken through tubing not larger than 2½ inches, eliminating the requirement for a 24-hour run.

Pennsylvania Commission May Order Rate Reductions

PITTSBURGH, Pa.—The Public Utility Commission, invoking a provision of the new utility act, may order temporary rate reductions in western Pennsylvania pending the submission of complete inventories and appraisals by local natural gas companies.

The commission recently used its power in imposing temporary reduced rates in the Duquesne Light case while awaiting appraisals and inventories to determine whether rates were justified.

Commissioner Thomas C. Buchanan said: "The commission will take immediate action once it obtains sufficient data upon which to base temporary action. Information already at hand and data submitted at these first hearings will be studied without delay."

Equitable Gas Co., Peoples Natural Gas Co., and Manufacturers Light & Heat Co. were involved in the recent hearings when inventories were requested by the commission.

By means of the new law property records and a monthly balance sheet from utilities will keep the commission abreast of their business.

Minimum Rate at Beaumont Is Reduced 25 Cents

BEAUMONT, Tex.—Reduction of the minimum cost of gas from $1.25 for 500 feet to $1 was announced by the United Public Service Co. The reduction will save 10,000 gas users about $45,000 per year, it was estimated.

Refinery Expansion

Names Nominating Committee A.P.I. Refining Division

W. S. S. Rodgers of Texas Co., vice president for refining of the American Petroleum Institute, has appointed the nominating committee which will select members for the 1938 general committee of the Institute's division of refining.

F. E. Rice of Phillips Petroleum Co., Bartlesville, Okla., is chairman. Members: H. W. Camp, Cities Service Oil Co., Tulsa; S. A. Giraud, Humble Oil & Refining Co., Houston; H. H. Hall, Standard Oil Co. of California, San Francisco; E. W. Isom, Sinclair Refining Co., New York; A. F. Lacomble, Shell Petroleum Corp., St. Louis; E. B. McConnell, Standard Oil Co. (Ohio), Cleveland; F. T. Manley, Texas Co., New York; L. G. Metcalf, Union Oil Co. of California, Los Angeles; H. G. Osborn, Continental Oil Co., Ponca City, Okla.; A. E. Pew, Jr., Sun Oil Co., Philadelphia; J. B. Rather, Socony-Vacuum Oil Co., Inc., New York; H. G. Smith, Gulf Oil Corp., Pittsburgh; D. E. Sullivan, Pure Oil Co., Chicago; F. W. Sullivan, Jr., Standard Oil Co. (Indiana), Chicago.

Southwest Texas Plant Is Acquired by White Wing

HOUSTON, Tex.—The Sullivan City, Tex., plant formerly operated by Fordyce Refining Co. has been acquired by the White Wing Refining Co. The new company was incorporated for $50,000. According to Ed W. Sullivan, vice president of the company, plans for construction of a cracking plant are now under way, work probably to be started within the next month.

Pure Oil Co.'s new 8,000-bbl. combination selective cracking unit built at the Toledo, Ohio, refinery

Natural Gasoline

Barnsdall to Build West Texas Gasoline Plant

Barnsdall Oil Co. has announced that construction of a new natural gasoline plant will soon be started in the Foster or Odessa field, about 5 miles west of Odessa, eastern Ector County, Texas. Daily capacity of the plant is to be about 12,000,000 cubic feet, the plant to be the first completed in that pool, which continues to expand as outpost wells are brought in from time to time. The plant will be about 3 miles from the Texas & Pacific Railroad.

Construction Started on New East Texas Gasoline Plant

SHREVEPORT, La.—Arkansas Fuel Oil Co. has begun construction work on a high-pressure absorption plant in Marion County, Texas, about midway between the county's two Trinity series oil producing districts along the Rodessa fault. The plant, second in the Texas portion of the Rodessa field, will be in the south part of the John Hanks survey, southwest of the Lodi district. Estimated cost of the project was not announced. Officials said it will have a capacity to process 25,000,000 cubic feet of gas daily into 15,000,000 gallons of gasoline. New and used equipment will be used.

The company already has started laying lines for a gathering system from its well at Lodi and others in the district which will tie into the plant.

Four Companies of Warren Petroleum Consolidated

Consolidation of the four Warren Petroleum companies into the Warren Petroleum Corp. has been announced by W. K. Warren, president of the corporation. There has been no change in the official personel. W. K. Warren is president, J. A. LaFortune, vice president; H. E. Felt, secretary, and A. J. Murphy, treasurer.

The original Warren Petroleum Co. was organized in Delaware in 1922, followed in 1929 by the Warren Petroleum Co. of Oklahoma, in 1933 by the Warren Petroleum Co. of Texas, and in 1931 by the Natural Gasoline Corp. In October, 1935, the latter company purchased the natural gasoline properties of the Amerada Petroleum Corp., including six plants in Oklahoma and one in Texas.

Freight Rates on Shipments of Turner Valley Natural Reduced

CALGARY, Alberta.—Freight rates on shipments of natural gasoline from Calgary to Regina, Saskatchewan, have been reduced from 60 cents to 30 cents per 100 pounds. The rate applies to gasoline produced from Turner Valley gas treated in absorption plants and used entirely for refining and distribution.

Production of Natural Gasoline Continued Increase in August

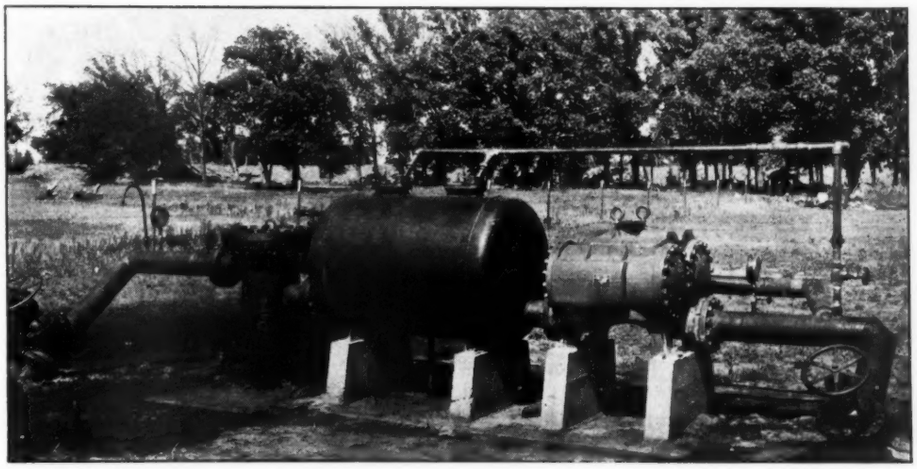
Daily average production of natural gasoline continued to increase in August, according to the monthly report of the Bureau of Mines, the daily average in that month being 5,740,000 gallons daily, or 147,000 gallons above the average in July. The August production was also 990,000 gallons, or 21 per cent above the average in August, 1936. The most notable increases in production were in the Panhandle, Kettleman Hills, and Texas Gulf fields.

Monthly production of the various districts, in gallons, was as follows: Appalachian, 4,422,000; Illinois, Michigan and Kentucky, 912,000; Oklahoma, 43,131,000; Kansas, 4,279,000; Texas, 56,260,000; Louisiana, 8,836,000; Arkansas, 987,000; Rocky Mountain, 6,682,000; and California, 52,445,000.

Stocks of natural gasoline continued to increase and on August 31 totaled 295,722,000 gallons, or 5,166,000 gallons more than on July 31. Virtually all of this gain was in plant and terminal stocks as refinery stocks showed little change, and on August 31 amounted to 141,498,000 gallons.

Shipments to jobbers and retailers and exports during the month totaled 21,882,000 gallons, or 5,796,000 gallons more than in July, 1937. Most of this gain was in exports, which were 11,004,000 gallons, or nearly double exports of July. Vapor pressures responded to seasonal influences, the average of shipments to refineries and exports increasing while the averages of shipments to refinery-owned bulk plants and jobbers continued to decline. The weighted average vapor pressure of all shipments in August was 18.7 pounds compared with 18.6 pounds in July and 18.9 pounds in August, 1936.

Pipe Line Activity



Meter installation, circulating tank and strainer in Oklahoma City field

Turner Valley Pipe Line Rate Reduced to 17 Cents

CALGARY, Alberta, Oct. 9.—Imperial Oil, Ltd., has announced a reduction of pipe line rates on crude from the Turner Valley field to Calgary from 22 cents to 17 cents a barrel.

Owatonna to Mankato Line Is Nearing Completion

Natural gas will replace manufactured gas in Mankato and North Mankato, Minn., possibly by November, following sale of the distribution systems by Northern States Power Co. to Richard E. Crawford, who will operate as the Mankato Natural Gas Co. Thirty-three miles of 8-inch line is now being built by Northern Natural Gas Co. to carry gas from the company's main line near Owatonna, Minn., to Mankato and North Mankato.

I.C.C. Pipe Line Report

With indications that earnings of the nine eastern pipe lines currently are running as well and probably a little higher than in 1936, the Interstate Commerce Commission reports these companies' 1936 operating revenue was 2.3 per cent above the 1935 figure, while operating expenses declined 4.9 per cent from 1935 to 1936.

The nine companies reported aggregate net income of $4,162,512 in 1935 against $3,501,739 in the preceding year. Operating revenues increased from $14,621,109 to $14,966,806 and operating expenses decreased from $10,207,202 in 1935 to $9,704,714 last year. Pipe line deliveries totaled 101,289,121 bbls. in 1936, an increase of 8.5 per cent over 1935 deliveries.

Deliveries for the first eight months of 1937 amounted to 74,639,000 bbls. compared with 65,252,000 bbls. in the same period of last year.

The 52 pipe line companies reporting to the Interstate Commerce Commission for 1936 showed aggregate operating revenues for the calendar year of $219,057,109 and operating expenses of $92,898,880. In the preceding year 53 companies reported to the commission, the change of one resulting from 13 additions and 14 eliminations. Aggregate operating revenues for 1935 amounted to $197,368,209 and operating expenses totaled $89,363,921.

Following is a summary of selected statistics relating to the operations and investment of pipe line companies for the calendar years of 1936 and 1935 as compiled by the Interstate Commerce Commission:

	1936	1935
No. companies at close of year	52	53
Investment in carrier property	$773,742,828	$763,009,274
Operating revenues	219,057,109	197,368,209
Operating expenses	92,898,880	89,363,921
Pipe line taxes	31,667,436	28,418,664
Pipe line operating income	94,490,793	79,585,624
Oil transported, bbls.	896,600,125	766,588,403
Miles of gathering lines operated	39,600	39,380
Miles of trunk lines operated	51,460	52,657

Cleveland-Canton Gasoline Line Is About Completed

The new 6-inch welded gasoline pipe line of the Standard Oil Co. of Ohio between Cleveland and Canton, a distance of about 64 miles, is about completed and will be ready to deliver finished products from the Cleveland refinery soon. This work has been contracted to Kelly-Dempsey & Co., Tulsa.

Rumanian Restrictions

American and British oil workers in Rumania are facing cancellation of residence permits in a general movement by the government to expel thousands of employed foreigners to help alleviate the unemployment situation among nationals.

The government has refused to prolong the residence permits of more than 30 British and American workers in the oil industry. The bulk of Rumania's oil industry is dependent on American and British capital. Although the American and British companies have staffed their Rumanian companies with nationals commensurate with sound operating practice, the decree will compel a sharp reduction in foreign employes.

Oil News from Foreign Lands

Deeper Pay at Bahrein

Continuing the search for additional oil horizons on Bahrein Island in the Persian Gulf, Bahrein Petroleum Co. proceeded with drilling its No 52 deep test below 4,415 feet after previously making sufficient production trials to establish existence of a pay horizon between 4,150 and 4,300 feet. On drill stem tests from 4,193 to 4,315 feet, it tested from 12,000,000 to 18,000,000 feet of gas per day through 1-inch bean against pressures ranging from 800 to 1,250 pounds per square inch.

Satisfied the pay at 4,150 to 4,300 feet carries undetermined but no doubt commercial quantities of oil, the company is preparing to start another test to thoroughly explore this new horizon. Meanwhile, No. 52 probably will be carried as deep as possible, or until basement rock is encountered.

Accompanying the large volume of gas in the tests were varying quantities of oil. In tests from 4,193 to 4,315 feet, two showed from 145 to 156 bbls. of 65-gravity oil with the gas. Gauges were based on an actual flow period of 30 minutes through bean and separator.

The new pay is of importance to Bahrein Petroleum and its subsidiary, California-Texas Oil Co., but is of secondary moment to the Arabian mainland where California Arabian Standard Oil Co. has a large concession and where shallow production has been established, and to other oil companies holding concessions in the Persian Gulf area. Petroleum Development (Qatar) Ltd., subsidiary of Iraq Petroleum Co., is especially affected by the development on Bahrein Island. Gulf Oil Corp. and Anglo-Iranian Oil Co., jointly interested in Kuwait Oil Co., in the northern part of the Persian Gulf, may be more remotely affected by the new developments at Bahrein. Kuwait Oil Co. is preparing to start drilling on its second test in Kuwait. The first test was abandoned at 7,950 feet, but had a small showing of oil. After rechecking the structural features, Kuwait Oil Co. moved its camp and drilling rig to location for No. 1 Burghan, 50 miles south of No. 1 Bahrah which has been plugged and abandoned.

Rumanian-Austrian Agreement

An agreement has been concluded between Rumania and Austria whereby the former nation will resume shipments of petroleum to the latter in exchange for semifinished iron goods. This is the first compensation arrangement reported in relieving the marketing restrictions placed on Rumanian petroleum companies through exchange limitations.

The agreement is expected to make it possible for Austria to again secure oil from Rumania which is its natural source of supply. Shipments during the current year were interrupted because of Austria's refusal to pay the foreign exchange demanded by Rumania.

This dispute with Rumania has brought about a decided change in the amounts of oil and gasoline imported by Austria and the countries of origin. In the first six months of 1937 total imports of crude oil where only 267,598 metric quintals, compared to 769,117 in the same period a year ago. While in 1936 Rumania was the only source of supply, in the first half of 1937 an amount of 20,000 metric quintals was imported from the United States.

Total imports of gasoline, however, increased from 250,432 metric quintals the first half of 1936 to 317,099 in the first six months of 1937, of which Rumania supplied 213,940 compared to 247,370 a year ago. This year the United States shipped 36,132 metric quintals of gasoline to Austria compared to 314 in 1936; the Netherlands Indies 20,920 m.q. in 1937 against 1,359 in 1936 and Italy 31,218 m.q. this year compared to nil in the first half of 1936.

The agreement with Rumania may virtually halt gasoline shipments from the United States to Austria returning the situation to its status existing prior to the dispute and interruption of traffic caused by exchange demands.

French Demand Growing

Increasing consumption and accumulation of government supplies as a general preparedness is placing an increasing burden on the French refining industry. France's refineries built in a few years and mostly commissioned in 1934 and 1935 are being called upon to handle increasing amounts of crude.

During the first seven months of 1937, according to the U. S. Trade Commissioner's report from Paris, France imported 3,586,113 metric tons of crude oil compared with 3,358,041 tons during the like period in 1936. Imports of crude and petroleum products reached an aggregate value of 1,564,000,000 francs against 831,000,000 francs for the same period last year. Crude importations have risen rapidly in ratio to finished products.

The United States furnished 20 per cent of petroleum imports, including crude, falling behind Iraq, which is the chief source of French oil, supplying 41 per cent of the requirements during the seven months. Rumania and Venezuela each supplied 7 per cent of the French petroleum imports. Total consumption of petroleum products during the period is estimated at 2,760,000 metric tons, against 2,461,000 tons for the same period last year. It is reported 142,500 tons of the total came from government controlled plants this year.

Colombian Wildcat

Colombian Petroleum Co., jointly owned by Texas Corp. and Socony-Vacuum, has started a wildcat 3½ to 4 miles southeast of development on the Petrolea end of the Barco concession. The new test is No. 1 Leoncito, Colombian's first venture in this direction.

Development is continuing on the Petrolea sector and operators are drilling No. 17, but results have disclosed nothing new. On the north end of the Barco concession, Colombian Petroleum is drilling at 1,325 feet in No. 4 Oro, immediately across the Rio de Oro from a group of producing wells completed several years ago by Colon Development Co. in Venezuela. Previous development in the Oro district has been further removed from the Rio de Oro which forms the international boundary between Colombia and Venezuela.

One of the old Colon wells on the Venezuela side has been opened and is producing fuel oil for Colombian Petroleum Co. drilling operations.

Colombian Petroleum Co. has completed movement of its Petrolea camp from a tributary of the Rio Tarra to the Rio Zulia further south which will afford greater latitude in importing field supplies. Much time has been spent during recent months in clearing tractor roads.

Burma Production Is Up

Although a sharp recovery was registered during the second quarter of the current year, Burma India crude oil production from January through June dropped below the level established in the first half of 1936. For the first six months of this year, Burma's crude oil production totaled 3,933,491 bbls., compared to 3,982,580 bbls. for the same period in 1936. It was significant to note, however, that 2,036,784 bbls. of the total first half production this year were recovered during the second quarter against output of 2,006,427 bbls. for the same three months in 1936. Production the first quarter of 1937 dropped to 1,896,707 bbls., compared to 1,976,153 bbls. for the first three months of 1936, according to a report from Austin C. Brady, American consul at Rangoon.

Ewing Galloway, N. Y.

Oil for Rouen, France, is brought up the River Seine in barge tanks and stored in underground tanks on the waterfront

ENGINEERING AND OPERATING SECTION

Presenting modern developments in operation of producing properties, refineries and gasoline plants, and pipe lines, including petroleum research in the field and laboratory

This Week

CONSTITUTIONALITY OF CONSERVATION LAWS SUPPORTED BY PETROLEUM ENGINEERING PRINCIPLES—By M. L. Haider ..... **Page 44**

The underground behavior of oil and gas has received wide-spread attention in recent years due to a greater interest in conservation, increased ultimate recovery and restricted withdrawals. Basic principles governing underground habits of oil and gas are outlined and correlated with laws governing production.

IMPROVEMENT IN SEASONAL GASOLINE AND LUBRICANTS—By R. C. Alden and D. G. Proudfoot ..... **Page 54**

Motor fuel surveys completed over the past few years reveal several changes in motor fuel characteristics, one of the most important being the increasing emphasis on seasonal volatility. Other data revealed by the surveys are discussed and also data regarding seasonal changes of lubricants.

IMPROPER ACIDIZING PRESENTS DESALTING PROBLEMS TO REFINING INDUSTRY—By Gustav Egloff, E. F. Nelson, C. D. Maxutov and Charles Wirth, III ..... **Page 57**

Chemicals used in acidizing wells in many cases form corrosive salts that greatly add to refining costs due to corrosion of equipment, salt deposition and cost of neutralizing chemicals. Effects of temperature, water added, and pressure are discussed.

GRAVEL-PACKED LINERS REDUCE WELL CAVING AND SAND PRODUCTION—By T. P. Sanders ..... **Page 59**

Use of gravel-packed liners, to reduce troubles caused by sand production and well caving, has been adopted as standard practice by the Texas Co. in the San Joaquin Valley of California. Methods of placing the gravel around the slotted liners are described.

UTILIZATION OF HEAT IN CENTRAL CRUDE DEHYDRATION PLANTS—By R. W. French ..... **Page 60**

Necessity for heating most crude oil emulsions during treatment to pipe line specifications provides a profitable setting for application of efficient heat exchange equipment. Fuel economy as well as efficient operation may be achieved.

PLUG-BACK WORK IN THE EAST TEXAS FIELD—By R. H. Maples and F. J. Mikeska ..... **Page 65**

Encroachment of Woodbine water in the East Texas field is causing operators to adopt methods of controlling this water production. Plug-back methods generally used are the "squeeze" and "nonsqueeze" methods, both of which are described.

REASONING BEHIND DIESEL FUEL SPECIFICATIONS—By T. B. Rendel ..... **Page 67**

Developments of the diesel engine toward higher speeds has resulted in the need of general specifications for high-speed engines. Present fuel specifications are compared and basic problems discussed.

ILLUSTRATED OPERATING IDEAS ..... **Page 73**

Drinking fountain cooled by expanding butane. Wind shield for pipe line welder. Reducing vibration while taking well potential. Pipe line paraffin scraper.

COLUMBIUM-BEARING STEEL HAS MANY FAVORABLE PROPERTIES—By W. D. Wilkinson, Jr. ..... **Page 74**

Addition of columbium to wrought chromium steels reduces air-hardening and promotes stability of toughness without loss of creep strength, thus these steels are expected to find wide use in the oil industry.

Constitutionality of Conse r Supported by Engineering F

By M. L. HAIDER
Chief Petroleum Engineer, Carter Oil Co.*

The petroleum engineer, broadly speaking, is concerned with two general types of studies; the first relates to the improvement of equipment required for drilling and producing of oil wells and the second relates to the study of the factors which control the underground behavior of oil and gas. Of these, the latter is by far the more important and has in recent years received widespread attention due to the constantly expanding interest in conservation, increase in ultimate recovery, restricted withdrawals, and related subjects. These studies involve the laws of hydrodynamics, thermodynamics, and physical chemistry. It is the purpose of this paper to attempt to outline the basic principles governing the underground habits of oil and gas and to correlate these principles with the laws governing the production of oil and gas.

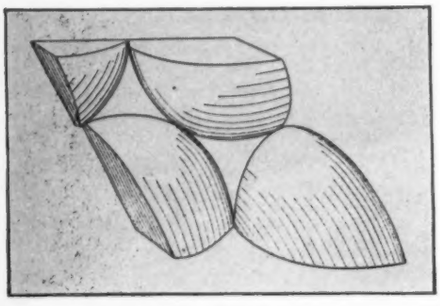


Fig. 1—Section of grains showing pore space

Oil Reservoirs

Petroleum is found in underground reservoirs ranging in depth from a few feet to many thousands of feet; wells of 8,000 to 10,000 feet in depth being not uncommon. It is beyond the scope of this paper to deal with the chemical and physical factors which govern the origin and accumulation of petroleum. However, a few words regarding oil reservoirs may not be amiss. In general an oil reservoir may be any subsurface geological formation which possesses porosity. In addition to porosity it must also possess suitable structural conditions which promote the accumulation of oil and gas, and must also possess an overlying impervious layer of rock which prevents the escape of oil and gas. Most commonly petroleum is found in porous sandstone, but also quite frequently in porous limestone. The porosity of sandstone is due to the very small openings between the sand grains. If you will picture in your mind a container of marbles, you will note the open spaces between the marbles. These open spaces also occur between the grains of sand which compose the sandstone and make what we call porosity. This is illustrated in Figure 1. Due to the relatively small size of the sand grains, the pore spaces between the sand grains are necessarily very small. In limestone, the porosity is due largely to solution cavities which have been caused by underground waters dissolving out portions of the limestone. The solution channels may vary in size from minute channels honeycombing the rock to large caverns.

Porosity is expressed as the per cent of the reservoir rock which is porous. For example, 20 per cent porosity means that each 100 cubic feet of reservoir rock contains 20 cubic feet of pore space. The porosity of producing formations varies widely, ranging from a few per cent to as high as 30 per cent to 40 per cent in some cases, the porosity depending on the size, uniformity and arrangement of the grains composing the rock. If the grains are perfect spheres the porosity is the same regardless of the size of the spheres, the larger spheres simply having fewer large openings.[1] This is illustrated in Figure 2.

Permeability is a measure of the ease with which fluids flow through porous media. There is no direct relationship between porosity and permeability, but generally speaking, the higher the porosity the higher the permeability. However, it is quite possible for two reservoir rocks to have the same porosity but have a wide difference in the permeability. A rock composed of large grains could have the same porosity as one composed of small grains. Since the resistance to flow is less through the larger openings, the rock composed of the large grains would have the higher permeability.[2]

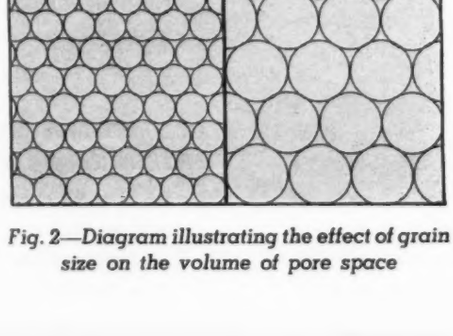


Fig. 2—Diagram illustrating the effect of grain size on the volume of pore space

The contents of an oil reservoir are always confined under pressure, the pressure varying widely depending largely upon the depth. In general, the pressure may be approximated by assuming 50 pounds per square inch for every 100 feet of depth, so that in a reservoir 4,000 feet deep, we should expect to find a virgin pressure in the neighborhood of 2,000 pounds per square inch. This pressure, commonly called "rock pressure" is not the pressure due to the weight of the overlying rock as is sometimes thought, but is due in most instances to the hydrostatic head of the water contained in the oil-bearing formation. Other causes of reservoir pressure are thought to be vapor pressure, chemical reactions, earth movement, geological folding and the earth's temperature.

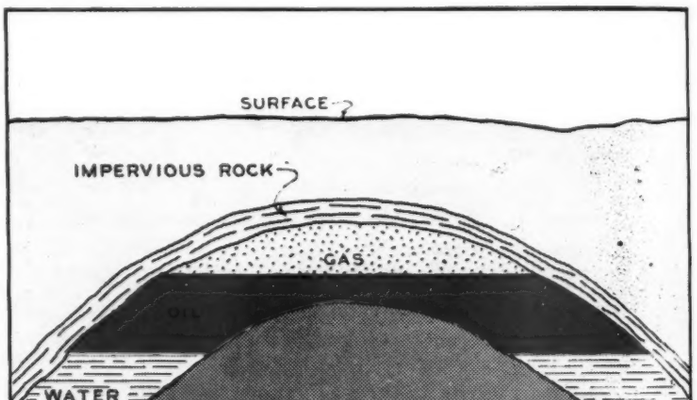


Fig. 3—Idealized cross-section showing position of gas, oil and water

Associated with the oil we usually find gas and water. Gas, if present, will be found dissolved in the oil, and in some cases, as free gas above the oil. The amount of gas in solution is dependent upon the reservoir pressure and temperature and the characteristics of the gas and oil. Other things being equal, the higher the pressure the greater the amount of gas in solution. At constant temperature, there is a definite quantity of gas which can be dissolved at any pressure for a crude oil and gas of given characteristics. When this quantity of gas is dissolved, the crude oil is said to be saturated at the existing pressure and temperature. In some pools, there is little or no gas associated with the oil, such pools occurring notably in Kansas. In other pools, although they contain considerable gas, the amount of gas present is less than could be dissolved under the existing conditions and the oil is said to be undersaturated, all of the gas present being in solution in the oil. The most notable example of this type is the East Texas pool where the oil is saturated to a pressure

*Presented before annual meeting of the American Bar Association, Kansas City, Mo., September 27 to 29, 1937. Authors title: "The Principles of Petroleum Engineering, Which, If Properly Understood and Applied, Should Uphold the Constitutionality of Any Reasonable State Police Statute Designed to Conserve, Maintain, or Require the Efficient Use of the Reservoir Energy of an Oil Pool to Enlarge Ultimate Recovery."

rvation Laws Principles

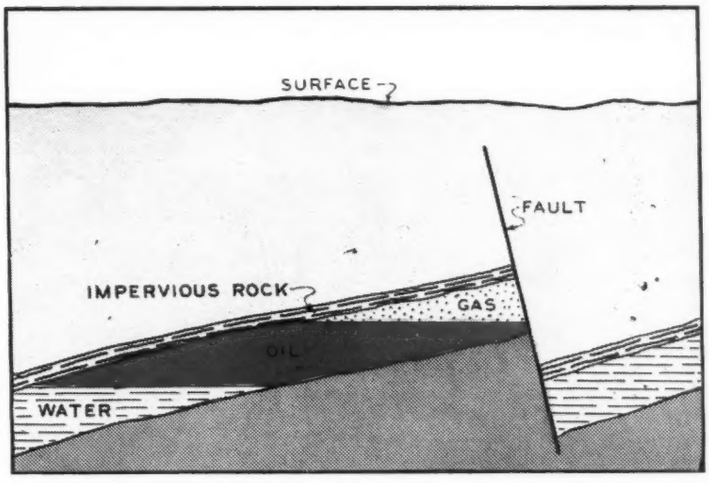


Fig. 4—Fault type structure

of 755 pounds,[3] whereas the virgin reservoir pressure was in the neighborhood of 1,600 pounds. In some pools the amount of gas present is more than can be dissolved under the existing conditions and the excess gas occurs as free gas forming what is commonly known as a "gas cap." While water and gas both are usually associated with the oil, one may be present without the other, but cases of this type are rather infrequent. When all three are present, the gas, if in excess of the amount which can be dissolved, will be at the top of the structure, the oil below it and the water below the oil, the relative positions of the three being governed by their relative densities. A cross-section of a "text-book" dome reservoir is illustrated in Figure 3, showing the position of the gas, oil and water. A reservoir of the fault type is illustrated in Figure 4. A reservoir of the type known as a stratigraphic trap, where a permeable rock pinches out against an impervious rock, is shown in Figure 5.

Gas in solution in crude oil has a marked and very desirable effect upon the characteristics of the crude oil, the two most important properties effected being viscosity and surface tension. The viscosity of the oil is reduced by the dissolved gas, which means that the mobility of the oil is increased and, therefore, it moves through the porous sand body with greater ease or with less consumption of energy. Other things being equal, the energy required to move oil through the sand body is directly proportional to the viscosity. Reduction in viscosity therefore presents a great advantage with respect to ultimate drainage.

Dissolved gas also reduces the surface tension of the crude oil. High surface tension causes the crude to adhere to the sand grains and requires considerable energy to push it out of the small capillary openings between the sand grains. A decrease in surface tension therefore is an important factor in increasing ultimate recovery. The retention of oil on the surface of the sand grains and in the small pores is illustrated in Figure 6. The higher the surface tension, the greater is the amount of oil thus retained.

The gravity and volume of the crude oil are increased due to the dissolved gas, but these properties are not so important in facilitating drainage. The amount of gas dissolved at various pressures, and the effect of this dissolved gas on the viscosity and surface tension for the Santa Fe Springs crude are shown in Figures 7, 8 and 9.[4]

The above changes in the properties of crude oil by virtue of the dissolved gas are very desirable and an oil pool should be so operated as to maintain the maximum amount of gas in solution. When the pressure is reduced below the saturation pressure, gas comes out of solution causing the viscosity and surface tension to be increased. Once the gas has been permitted to escape from solution it is extremely difficult and quite impractical to return it to solution in the reservoir by application of gas pressure. This is illustrated in Table 1 developed by Doctor Lacey.[4] It indicates the time required (after the pressure above the oil body has been increased) for dissolving half the amount of gas which would eventually go into solution due to the increase in pressure.

From this it may be seen that in order to reap the benefits of dissolved gas it is essential to retain the gas in solution by proper development and operation of the oil reservoir.

TABLE 1 — APPROXIMATE HALF-SATURATION TIME, SANTA FE CRUDE HELD IN 20-MESH SAND OF 45 PER CENT POROSITY USING METHANE GAS

Thickness of liquid-filled sand	Time required
100 feet	3,300 years
10 feet	33 years
5 feet	8 years
1 foot	4 months
6 inches	1 month
1 inch	20 hours
0 1 inch	12 minutes

The forces which serve to move the oil through the producing formation to the well bore are gas pressure, water pressure, and gravity. Producing formations may be classified according to their sources of reservoir energy as follows:

1. Gas energy only.
   (a) Gas present both as free gas and as dissolved gas.
   (b) Gas present only as dissolved gas.
2. Water energy only.
3. Both gas and water energy.
4. Gravity.

Of these, the gas energy is by far the most important since it is the principal source of inherent energy contained in an oil reservoir. The expansive force of the gas upon reduction of pressure is the chief propulsive force which moves the oil into the hole. Many oil pools are abandoned not because the oil has been exhausted, but because the gas has been exhausted thereby leaving the dead oil underground without sufficient energy to bring it into the well bore.

For years water was looked upon as a menace and source of difficulty and expense, but in recent years has been recognized as an important source of energy and also as a very effective flushing agent. It is now recognized that where water is associated with the oil, proper control of the water will materially increase the ultimate recovery from the pool.

The force of gravity is of some importance in the recovery of oil in fields where the producing strata are thick or suitably inclined and in the final stages of production, but at best, it is a comparatively slow acting and unimportant factor.

A well drilled to a producing formation punctures the reservoir, presenting an avenue of escape for the confined oil and gas. At the point at which the well penetrates the reservoir the pressure is reduced, creating a pressure differential between the well bore and the producing formation. This pressure differential causes the res-

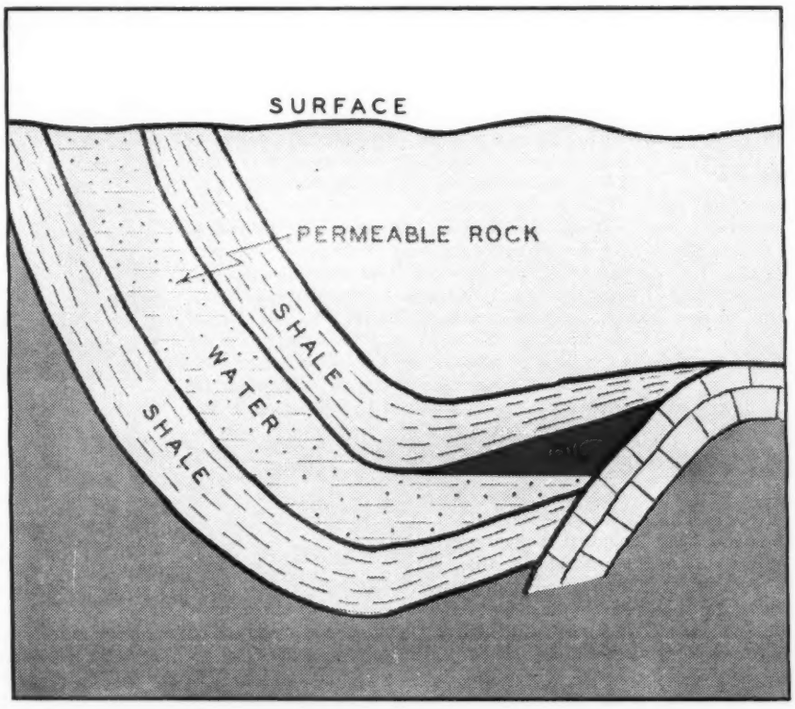


Fig. 5—Cross-section of a typical oil pool, caused by stratigraphic trap, showing outcrop of permeable rock and adjacent formations

ervoir fluids to move into the well bore, and if the energy contained in the reservoir fluids is sufficient, the fluids escape to the surface producing by what is termed "natural flow." The rate of flow depends on the magnitude of the pressure differential and the characteristics of the reservoir fluids and the reservoir rocks. As production from the well continues, the reduced pressure area tends to expand reaching portions of the reservoir more and more remote from the well bore. The area affected by the reduction in pressure may be called the drainage radius of the well. The area which can be efficiently drained by a well depends upon the rate of production, the characteristics of the reservoir fluids, and the characteristics of the reservoir rocks. As the reservoir energy is depleted to the stage where it is not sufficient to lift the oil to the surface, artificial methods must be employed to lift the oil, as the reservoir energy serves only to bring the oil to the well bore. Some reservoirs, even when first drilled, do not contain sufficient energy to lift the oil to the surface and energy for lifting must be supplied from an outside source.

As additional wells are drilled in the pool and

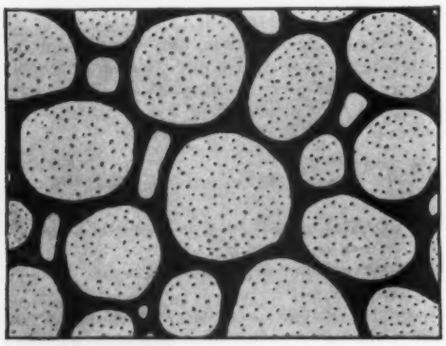


Fig. 6—Showing retention of oil on surface of sand grains and in the smaller openings

the low pressure area in the vicinity of each well spreads, there is a tendency to reduce the reservoir pressure of the entire pool. In the foregoing discussion it was pointed out that the gas held in solution at high pressure is released from solution upon reduction of pressure, thereby increasing the viscosity and surface tension of the oil, which results obviously should be avoided if possible. One might therefore, ask, how can a reduction in reservoir pressure be avoided?

Maintaining Reservoir Pressure

The reservoir pressure can be maintained by:

1. Restricting the rate of withdrawal so as to take advantage of the natural water drive in pools where a natural water drive exists;
2. Injection of sufficient gas or water into the reservoir to compensate for the fluids which are produced.

The reservoir pressure decline can be curtailed by:

1. Injection of gas or water to the reservoirs;
2. Controlling rates of withdrawal;
3. Control of gas production;
4. Control of water production;
5. Correct well spacing.

The degree of influence these various factors have on the decline of the reservoir pressure depends upon the extent to which they are carried out.

In the majority of cases the portion of the porous reservoir which is filled with oil and gas is only a small part of the total porous formation, the remaining formation being filled with water which in most cases is under considerable hydrostatic head. As the pressure in the oil bearing portion is reduced the water tends to advance, creating an approach to maintaining or equalizing the pressure in the oil bearing portion. The rate at which water moves in is dependent largely upon the permeability, porosity, and the areal extent of the water bearing portion of the reservoir. These factors govern the extent to which the water drive can maintain the reservoir pressure. In many instances the rate of water movement is sufficient to maintain the reservoir pressure at practically its original value at commercial rates of production from the pool. Obviously, where this is possible, the rate of production should be controlled to accomplish this end. However, in many instances the water drive is effective only at rates of production which are commercially insufficient.

Secondary Recovery

In pools of the gas energy type, there is no natural resource which can be utilized to maintain the reservoir pressure, the decline in pressure being a function of the quantity of fluids withdrawn, the exact relationship being dependent upon the characteristics of the reservoir fluids and the reservoir rocks, but is independent of the rate of production. In pools of the gas energy type and in pools where the water drive is not sufficient to maintain a commercial rate of production, the reservoir pressure can be maintained by injection of sufficient gas or water into the formation to compensate for such fluids which are withdrawn. However, in most instances the quantity of gas required to accomplish this is not readily available without incurring considerable expense and it is the common practice to return to the producing formation only such portion of the produced gas which remains after the extraction of gasoline and the fuel requirements have been satisfied. While this quantity of gas is not sufficient to entirely prevent the decline of reservoir pressure, it very materially reduces the rate of decline. This procedure has been used in a number of pools for several years and has been definitely proven to be practical and beneficial. Although the writer knows of no instance where water has been injected into the producing formation to maintain pressure, this is considered quite practical as far as the pressure maintenance angle is concerned, the disadvantage being largely the fact that sufficient quantity of water for this purpose is not ordinarily available. However, water injection has been quite successfully used in many instances as a means of secondary recovery.

By secondary recovery is meant the injection of air, gas or water into the reservoir after the original pressure has been depleted or very materially reduced by production. The injection of air or gas is commonly referred to as "repressuring" and supplies from an outside source the energy required to move the dead oil through the formation into the well bore.[6] In some cases the reservoir pressure is actually increased considerably, but in most instances the injected gas merely carries along, mechanically, toward the producing well, some of the dead oil remaining in the partly depleted reservoir. Although substantial increases have been obtained by repressuring, gas injection after the reservoir pressure has been depleted is much less effective than pressure maintenance, due to the fact that the benefits of the dissolved gas have been lost. As shown by Lacey,[4] it is quite impractical to again return the gas to solution in the reservoir oil once the pressure has been depleted. Injection of water to the reservoir sand is commonly referred to as water-flooding.[6, 7] This method has been used intensively in the Bradford pool of Pennsylvania,[8] and more recently in other areas.[9] The injected water supplies from an outside source the energy required to move the dead oil through the reservoir into the well bore. Water is a better flushing agent than gas and its use has resulted in substantial increases in recovery, but its use at present is limited due to economic reasons. Here again, the results would be much greater if used before the reservoir pressure is depleted.

The amount of gas produced per barrel of oil should be held to as low a value as possible for two reasons; first, in order to attain the greatest recovery, the gas should be so produced as to utilize, to the highest degree possible, the energy contained in the gas for bringing oil into the well bore; and, secondly, since the decline in reservoir pressure is directly affected by the quantity of material withdrawn from the reservoir, a reduction in the amount of gas produced per barrel of oil will result in a reduction in the reservoir pressure decline per unit of oil produced. As production from the well continues, the reduced pressure area created in the vicinity of the well bore tends to spread and as it reaches portions of the reservoir remote from the well which contain free gas or water, these tend to move toward the well. Improper production rates will tend to "pull" the gas or water into the well, causing fingering or channeling, resulting in a waste of gas energy or water coning. Many oil pools become depleted (commercially nonproductive) due to the depletion of gas energy and not exhaustion of oil. This is very well brought out by an experiment conducted by

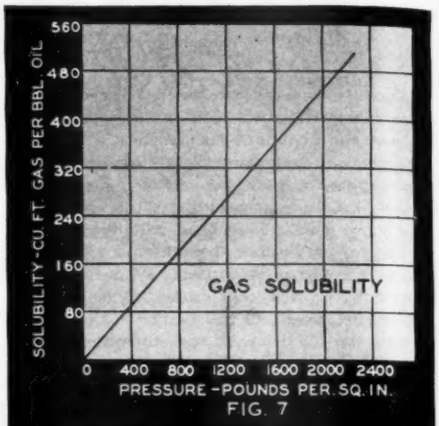


FIG. 7

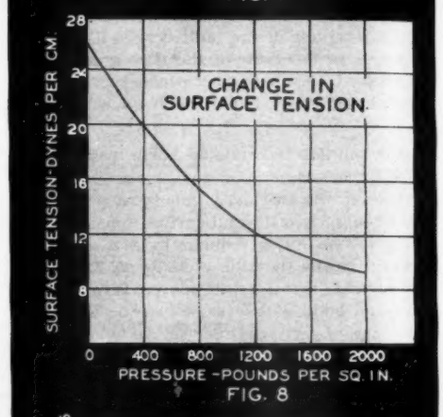


FIG. 8

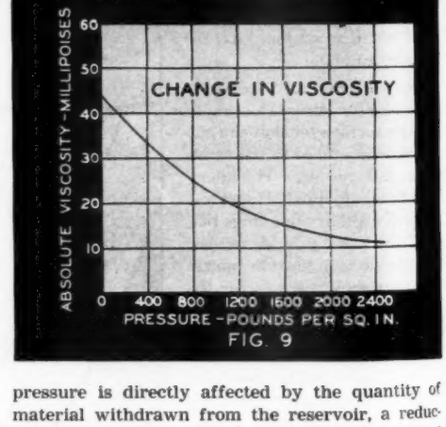


FIG. 9

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the Humble Oil & Refining Co. in the Olney pool of Archer County, Texas. This pool, consisting of 60 acres, had been exploited to exhaustion through 25 producing wells which was a density of one well to 2.4 acres. After abandonment, the field was taken over and the reservoir energy was restored through repressuring with gas. After the reservoir energy had been restored, oil production was again initiated producing only one well for each 7½ acres. To June 1, 1937, this project has produced approximately 53 per cent as much oil as had been originally recovered at the time the pool was abandoned. This serves to illustrate forcibly that *dissipation of the reservoir energy leaves considerable oil in the reservoir* which might be recovered and that *conservation and efficient utilization of the reservoir gas is essential to the greatest ultimate recovery.*

Controlling Gas Production

Gas production can be controlled by several methods:

1. *Proper completion methods*—Wells which are drilled into the gas cap area should be so completed as to shut off the gas in the gas cap area utilizing only such portion of the gas energy as is necessary to produce the oil. This can be accomplished by: (a) Setting the casing through the gas cap into the top of the oil producing section; (b) setting the casing entirely through the producing formation and perforating the casing opposite the oil zone.

2. *Operate at minimum gas/oil ratio*—There is for most wells, a rate of production which yields a minimum gas/oil ratio. This rate of production varies from pool to pool and from well to well, being largely a function of the reservoir content and the characteristics of the reservoir rock. As has been shown above, the principal source of energy for bringing the oil to the well bore is the expansion of the gas that accompanies the oil, and therefore, the amount of gas produced per barrel of oil has come to be considered as a yard stick of the efficiency with which a well is operated. However, important as the gas factor is, it must be considered in the light of the reservoir pressure and the rate of decline of reservoir pressure. In some instances the minimum gas/oil ratio is attained only at very high rates of production. If all the wells were operated at the maximum rate in a pool which had a natural water drive, the result would be a very rapid decline in the reservoir pressure, liberating from solution additional quantities of gas and causing irregular encroachment of the water. This would result in a rapid increase in the gas/oil ratio and no benefit whatever would be derived from the water drive. This undoubtedly would result in a reduction in ultimate recovery so that in such cases it would be advisable to restrict the rate of production and produce at a temporarily higher gas/oil ratio in order to produce with a lower overall gas/oil ratio and obtain a uniform encroachment of the water. The proper utilization of gas energy in the field usually requires a variation of operating methods from well to well to best suit the conditions of the individual wells. The most efficient utilization of gas is attained when the gas moves with the oil so that the gas/oil ratio approaches as nearly as possible the amount of gas dissolved in the oil at the existing reservoir pressures.

3. *Mechanical means of controlling gas production*—Various methods have been utilized for reducing the amount of gas produced per barrel of oil. Some of these are: Lowering the tubing, back pressuring the well, bottom-hole chokes, tapered tubing, cementing liners in the well, and formation packers. Of these the first four yield results which generally are only partially effective in that while they reduce the gas/oil ratio, the ratio quite frequently is still excessive. In studies which have been made, it appears that in cases where free gas exists above the oil, the most satisfactory method of reducing the gas/oil ratio is by some mechanical means such as cementing off the gas section or setting a formation packer to shut off the gas section.

4. *Shut-in or restricted high gas/oil ratio wells*—Wells which produce with excessive gas/oil ratios should be either restricted in the amount of gas which they produce or should be shut in entirely. Wherever possible the latter procedure is desirable. There have been numerous cases where wells drilled on the high part of the structure which were permitted to blow large quantities of gas to the air in order to recover a relatively small amount of oil, produced increasing amounts of oil and eventually were classified as oil wells. However, this is only possible at the expense of an enormous waste of gas energy and, although conversion of a gas area into an oil producing area might be profitable for that particular operator, it results in a material loss in recovery for the pool as a whole. The blowing of large volumes of gas from wells located on top of a structure is one of the most flagrant violations of the principle of conservation. Unquestionably the owner of a well on the top of a structure which will produce gas only, or produce oil and gas at a high gas/oil ratio is entitled to some return, but he should not be permitted to so operate his well as to cause a reduction of the ultimate recovery of the pool.

In a strict engineering sense such instances can measurably be taken care of by allocating to each well or tract a certain volumetric withdrawal from the reservoir of gas in the one case or of both oil and gas in the other.[10] Thus permitting the owner in a gas area to realize a fair return on his investment and at the same time not unduly prejudice the owners of acreage down structure.

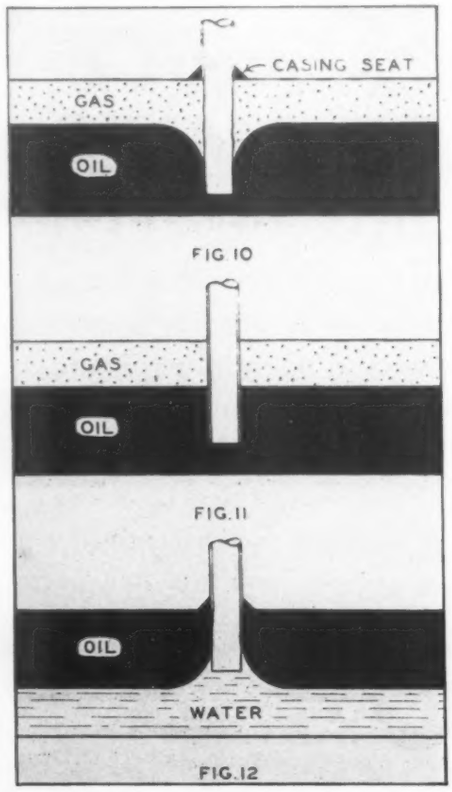

Fig. 10—Gas coning due to improper completion of well and excessive rate of production. Fig. 11—Proper completion of well in gas cap showing casing set through gas cap. Fig. 12—Water coning due to excessive rate of production

It is probable that a police statute carrying out this principle and at the same time reasonably protecting all of the operators in the pool in the enjoyment of their common property, the reservoir energy, might be necessary. In contrast, under the law of capture an operator would be permitted to blow the gas to the air if he so chose, regardless of the effect on his neighbor or the recovery of the pool as a whole.

Since withdrawal of any fluid from the reservoir causes a reduction in the reservoir pressure, it is essential that the water production also be curtailed. A barrel of water withdrawn from the reservoir has the same effect upon the reservoir pressure as does the withdrawal of a barrel of oil. Control of water production is largely a mechanical operating problem which usually can be solved satisfactorily.

Well Spacing

The correct spacing of wells in the pool is an important factor in controlling the efficiency of operation of the entire pool. Much has been written on the subject of well spacing and the relationship of well spacing to ultimate recovery. However, our knowledge of the hydrodynamics of reservoirs is not advanced sufficiently to be able to evaluate properly all of the factors which determine the correct well spacing. The determination of proper well spacing is one of the most important problems which faces the petroleum engineer at the present time. During the past few years, due to the advent of restricted withdrawals and the resultant curtailment of production, the industry in general has come to realize that the close spacing of wells as practiced in the past is unnecessary to recover the oil. In fact, many petroleum engineers today are convinced that with proper control of production it will be possible to recover a larger amount of oil than has been the case in the past, in spite of the fact that wells are spaced much more widely than has been the practice. The close spacing of wells can be considered to reduce the ultimate recovery of the pool from two standpoints:

1. The drainage radius of a well has been defined as the area affected by the reduction in pressure due to withdrawal of oil and gas from the well. This, theoretically, could be the entire producing formation. Actually, the drainage radii at a number of wells will intersect as the reduced pressure area spreads from the well, causing well interference. Wells spaced too closely will cause well interference early in their life and thus cause a rapid decline in the reservoir pressure, permitting dissolved gas to be liberated and cause excessive gas by-passing. *The result is inefficient utilization of the reservoir energy and, therefore, a reduction in the ultimate recovery of the pool;*

2. In pools of the water drive type there is a maximum rate of petroleum at which the reservoir pressure can be maintained. In order to utilize to the utmost the natural water drive, it is therefore, necessary to restrict the total production from the pool to this maximum value. Since the total production for the pool is apportioned among the wells in the pool, it is obvious that having a fixed total production, the greater the number of wells, the less the production per well. There is for each well a minimum economic rate which must be maintained in order for the operation to be profitable to the owner. It is frequently the case that when the efficient rate of production for the pool is distributed among the wells in the pool, the production per well is extremely low. This is illustrated forcibly in the case of East Texas where an attempt has been made to curtail the total production from the pool so as to take advantage of the natural water drive. The excessively close spacing of wells has resulted in extremely low

(Continued on Page 52)

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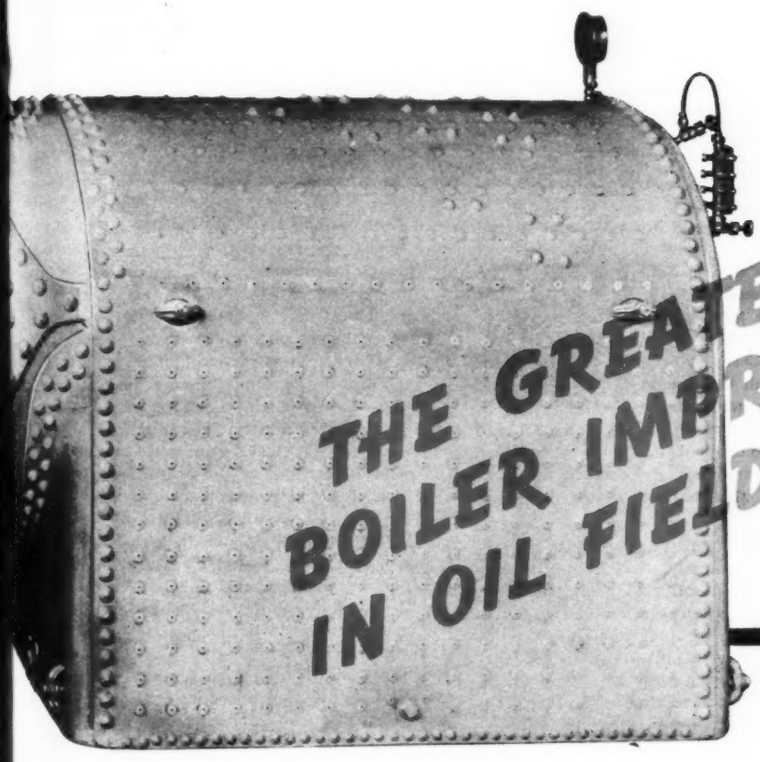

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allowables per well. In pools of the gas energy type which are closely spaced, a reasonable withdrawal per well results in a high withdrawal from the pool causing rapid decline in reservoir pressure with the attendant high gas/oil ratios and waste of reservoir energy resulting in a lower ultimate recovery from the pool. . . .

The foregoing discussion may be briefly summarized as follows: Gas under pressure in the reservoir is the all-important source of energy in the production of oil. Efficient use of the reservoir energy results in the highest ultimate recovery and inefficient use or waste of the reservoir energy, results in a loss in recoverable oil. At the high pressure existing in oil reservoirs, gas if present, is dissolved in the oil materially reducing the viscosity and surface tension. A reduction in viscosity and surface tension renders the oil more readily recoverable. The gas is retained in solution by maintaining the reservoir pressure, which result can be accomplished by utilization of the natural water drive, if one exists, or by returning to the producing formation sufficient gas or water to compensate for the fluids which are withdrawn.

The rate of reservoir pressure decline can be materially arrested by returning gas or water to the formation, by proper control of the rate of production, and by proper well spacing. These principles are not new to the petroleum industry or the petroleum engineer, neither are they pure theory nor speculation. They have been known and understood for many years and have been tried and proven. One might naturally ask: Why then, are they not more generally followed and applied? The answer is that too frequently it is not possible due to the selfishness and shortsightedness of the many operators and royalty owners who are usually involved. Efficient operation can only be achieved where the pool as a whole, not the individual well, is considered as a unit. This can be accomplished only where the pool is owned by a single operator, by cooperative agreement among the several owners or by unitization of the properties involved. Where the pool is not singly owned, unitization seems to be the most satisfactory solution.

Unitization

Unitization has been defined[11] as the "Practice of unitizing the ownership and control of an actual or prospective oil or gas pool by the issuance or assignment of units or undivided interests in the entire area with provisions for development and operation by an agent, trustee, or committee representing all holders of undivided interests therein." Unitization may consist of leasehold interests only or may include royalty interests as well. The most satisfactory unit is one which includes both leasehold interests and royalty interests and covers the entire producing area. Where this is the case, all problems relating to drainage from one tract to another within the pool, proper well spacing, producing rate of individual wells, etc., are obviated and the pool can be operated with the highest degree of efficiency for the pool as a whole.

To accomplish this end, it is very essential that the royalty owners also join in the unitization agreement. Unitization agreements are very difficult to consummate due largely to the fact that so often the people involved do not appreciate the advantages to be gained and are not farsighted enough to overlook a small apparent loss in order to gain the greater ultimate goal. . . . .

Turning to the second phase of this paper, in which I shall attempt to correlate the engineering principles which I have discussed with the law of oil and gas, I naturally enter upon this task with diffidence because I am a petroleum engineer and not a lawyer. First of all, I wish to say that I shall narrow my discussion in this particular, namely: It shall be my purpose to relate the engineering principles I have dwelt upon with the conservation statutes of the several states. Whatever application of my engineering studies and experience that I shall give to constitutional questions requires that I use the legal opinion of oil lawyers as it may be found in numerous treatices and as it has been expressed to me personally. I have drawn upon legal opinion for the following propositions, and as I indicate the several basic propositions that I shall here state, I shall endeavor to show how the particular constitutional question is supported by the engineering principles I have sought to elucidate:

Engineering Principles

1. The widest field for the operation of the police power of a state is where the property rights of several proprietors are so interdependent that what one does, may, in a substantial degree, prejudicially affect the property rights of his neighbor or neighbors. I am further told that the constitutional test of a property adjustment of this kind depends upon the reasonableness thereof. If this constitutional principle holds, the application of my engineering thought is direct and immediate. While the technical part of this paper goes into many details, the following general conclusion may be drawn therefrom:

(a) Reservoir energy, particularly gas energy, possesses the attribute of mobility.

(b) It is the principal force which oil operators must depend upon to move their oil through the sand to the bore hole, and if the pressure is sufficient, to the surface.

(c) I am told that one appellate court specifically and many other by necessary inference have held that the reservoir energy is the common property of all the operators in an oil pool.

(d) I have demonstrated that the conservation of the reservoir energy to the highest point of efficiency in the oil pools of the country is the all-controlling circumstance upon which we must depend to enlarge the recovery of oil from our pools.

(e) These self-evident facts lead to an inevitable conclusion; namely, that if one or several oil operators in an oil pool shall waste, or even inefficiently use, the reservoir energy of the pool, while disposition of their neighbors in the pool is to the contrary, a police statute conserving the reservoir energy for the benefit of all of the operators in the pool, so that each shall have his share of that energy for oil-producing purposes, is constitutional.

2. I am told that since oil and gas are irreplaceable and exhaustible natural resources, the courts have found a basis for an exercise of the police powers to conserve reservoir energy for larger ultimate recovery under that part of the police power which supports legislation to promote the general welfare and general prosperity. If the constitutional proposition here asserted is sound, we have another source of police power to look to to conserve reservoir energy for larger ultimate recovery.

3. Numerous oil-producing states have enacted conservation statutes, differing in form and the degree of regulation imposed. The states that have so acted are Texas, New Mexico, Louisiana, Oklahoma, and Kansas; and a comprehensive measure of this sort passed one house of the Michigan legislature at its recent session. Doubtless other states coming into oil production will be obliged to consider legislation of this type. While it is true that the enactments of the several oil states in respect of conservation differ in form and, in many respects, in principle, there is clear statutory purpose underlying most, if not all, of them. In brief, the design of these measures generally is to conserve reservoir energy for larger ultimate recovery and to adjust and settle the correlative rights of the operators in an oil pool in so doing. Every oil lawyer present knows that the complexities, uncertainties, and differences in producing conditions, first between pools in the state; secondly, between properties in the same pool; and thirdly, in respect of wells on the same property, forbid the enactment of a conservation statute specific in every rule of conduct laid down. The statute must lay down the general standard of conduct among oil operators to effect conservation, leaving the necessary power of investigation and administration to an administrative agency. I am advised that the following methods leading to the conservation of reservoir energy, and therefore a larger ultimate recovery, may be prescribed under the police powers of the states, the sole ground of attack being the reasonableness of the regulation imposed:

(a) The determination of the manner in which wells should be drilled, equipped, and completed to conserve reservoir energy; any regulation under a statute to effect this purpose to be adapted to the peculiarities of the properties and wells involved.

(b) The establishment of a maximum gas/oil ratio to conserve energy; this, again, to be adapted to the peculiar producing advantage, certainly of each property, if not of each well.

(c) A requirement for gas pressure maintenance to conserve energy; here, again, the peculiarities of each property—perhaps of each well—to be allowed for.

(d) Requirements for gas repressuring where maintenance of pressure in the particular pool is no longer practical; here, again, the factor of the difference between properties, and perhaps between wells, to be taken into account.

(e) The limiting of volumetric withdrawal where a gas cap in an oil pool is penetrated, the well producing gas only, or a high gas/oil ratio. This would be within the principle of adjusting the correlative rights of the operators in the way of conserving the reservoir energy for ultimate recovery for the benefit of all.

(f) In the case of a water-drive field, the laying down of rules that would control the daily rate of oil production per well so as to insure, to the extent possible, uniform water encroachment which, if accomplished, substantially enlarges ultimate recovery.

The theme of this paper, whether it relates to technical engineering questions or to the conservation laws of the states, is that *reservoir energy, of whatever type, must be conserved for larger ultimate recovery;* that adjustments among operators in the same pool, to effect that purpose, must be made, and that all of these things may be achieved within constitutional bounds if reasonable in all the circumstances of the particular case.

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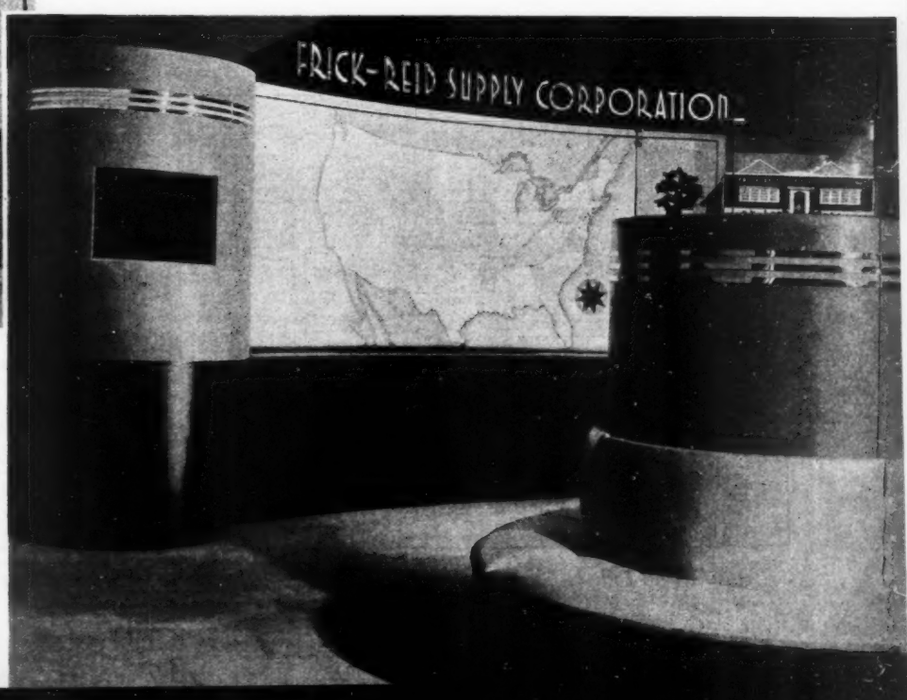

OIL-WORLD EXPOSITION HOUSTON 1937

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Improvement in Seasonal Gasoline and Lubricants

By R. C. ALDEN and D. G. PROUDFOOT
Phillips Petroleum Co.*

Numerous surveys reporting gasoline volatility have been reported in the literature. The most continuous and comprehensive have been those of the U. S. Bureau of Mines, the first[3,4] of which were made in 1915, 1916, 1917, and 1919. These annual surveys were followed by semi-annual surveys[5] beginning with January 1920 and continuing until August 1931. The semiannual surveys were interrupted by the depression but now have been resumed in cooperation with the C.F.R. Committee. Three reports[6] have been published dealing with surveys of the gasolines of 1935-36 winter, 1936 summer, and 1936-37 winter.

At the 1935 convention of the Natural Gasoline Association of America, Becker and Bauer[1] presented the results of a survey of gasoline volatility on the Atlantic seaboard covering the interval 1929 to 1934, inclusive, and the authors participated in a paper[2] presenting similar data pertaining to gasolines marketed in the Mississippi Valley. It is one of the purposes of this paper to extend the data of the last mentioned survey to the present time.

The essential features of the survey, as described in the earlier article,[2] have remained unchanged. In the intervening 2½ years 3,221 samples of gasoline have been tested, of which 1,682 were housebrand gasoline, 772 were premium gasoline, and 767 were third grade gasoline.

The proportions of the various housebrand gasolines in the survey continue to reflect the volume of sales about as well as indicated in Table 1 of the earlier article.[2] Likewise, the sampling program for the housebrand gasoline includes the same cities in about the same proportions as described in Table 2 of the original article.[2]

Figures 1 to 4 inclusive graphically present the old and the new volatility data.

*Presented under author's title, "Some Improvements Relating to Seasonal Gasoline and Lubricating Oil."

The data reveal several important changes in the volatility of mid-west gasolines. By far the most noteworthy of these changes is the increasing emphasis on seasonal volatility in motor fuels.

Figures 1 and 3 deal with Reid vapor pressure and 10 per cent evaporated temperatures. For purposes of simplicity the discussion can be limited to vapor pressure as indicative of front end volatility. Referring to Figure 1, it was concluded on the basis of the data up to 1934 that although the annual average vapor pressure of housebrand gasoline was increasing slightly, the changes were taking place in the cooler seasons. However, since 1934 the annual average vapor pressure has increased markedly, with increases observed for each quarter except the second. Referring to Figure 3, housebrand gasoline continues to have the highest vapor pressure, with premium gasoline next and third grade gasoline the lowest. This last difference is much more pronounced in the winter months than in the summer time. There is not much difference in the seasonal variation in vapor pressure as practiced in 1936 and 1929. Thus it can be stated that during the eight years very little change in seasonal front end volatility has been accomplished except that motor fuel now has a somewhat higher vapor pressure.

S.A.E. — Presented before regional meeting of the Society of Automotive Engineers, Tulsa, Okla., Sept. 30 — Oct. 1, 1937.

The lower portions of Figures 2 and 4 deal with the 50 per cent evaporated temperature. Referring to Figure 2, the annual average midpoint temperature of housebrand gasoline has been practically constant since 1934. However, there are marked changes in seasonal trends. Whereas, at the end of 1934, the midpoint was steadily decreasing in each quarter, we find since 1934, the gasolines of the first, second and fourth quarters continuing their decline while the gasolines of the third quarter increase at the midpoint temperature. The following tabulation shows the midpoint temperatures for the first and third quarters of the eight years covered by this survey.

	First	Third	Difference
1929	257	261	4
1930	255	262	7
1931	252	257	5
1932	242	249	7
1933	235	243	8
1934	229	240	11
1935	225	242	17
1936	222	244	22
1937	220	...	..

Thus, even in view of the fact that the annual average midpoint has not materially decreased since 1934, there has been a pronounced increase in seasonal variation of the 50 per cent temperature. The 50 per cent temperature of winter gasoline has been rapidly decreasing, while that of the summer gasoline has been slowly increasing. . . . .

Referring to Figure 4, premium gasoline has an increasingly lower 50 per cent temperature as compared with housebrand gasoline and third grade gasoline has a considerably higher 50 per cent temperature than has housebrand gasoline. Until 1934 the annual average midpoint temperature of housebrand gasoline was about the same as the annual average midpoint temperature of the premium gasoline of two to three years previous. Since 1934 the midpoint of housebrand gasoline has remained constant while the annual average midpoint of premium gasoline has decreased to 215° F. which is very close to aviation gasoline specifications.

The upper portions of Figures 2 and 4 present the data pertaining to the 90 per cent evaporated temperature. The average annual 90 per cent tem-

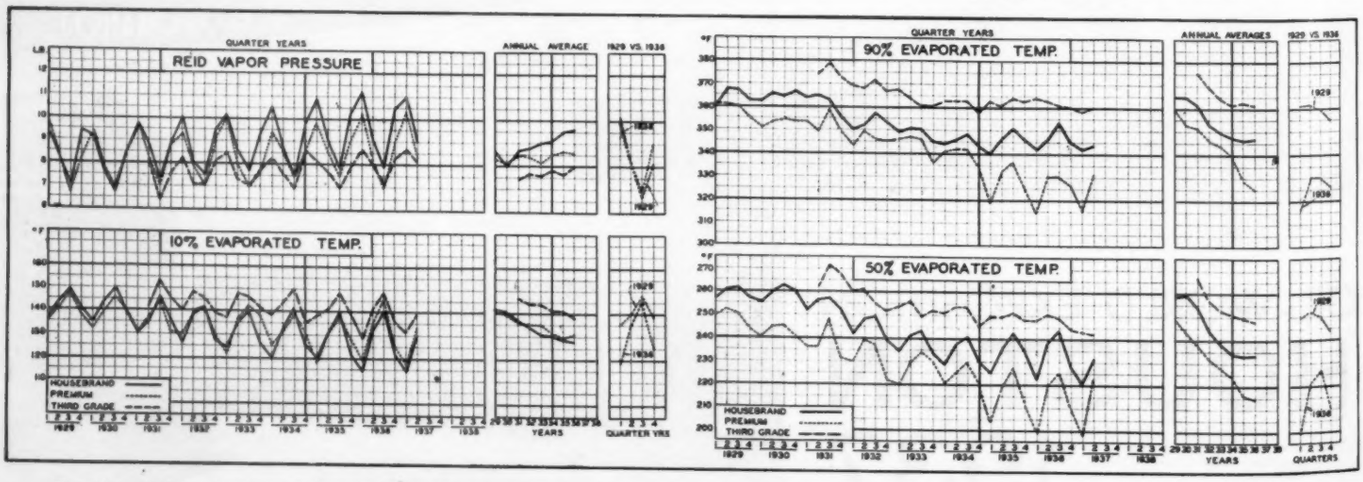

Fig. 1 and Fig. 2—Trend in volatility characteristics of housebr and motor fuels from the mid-western portion of the United States

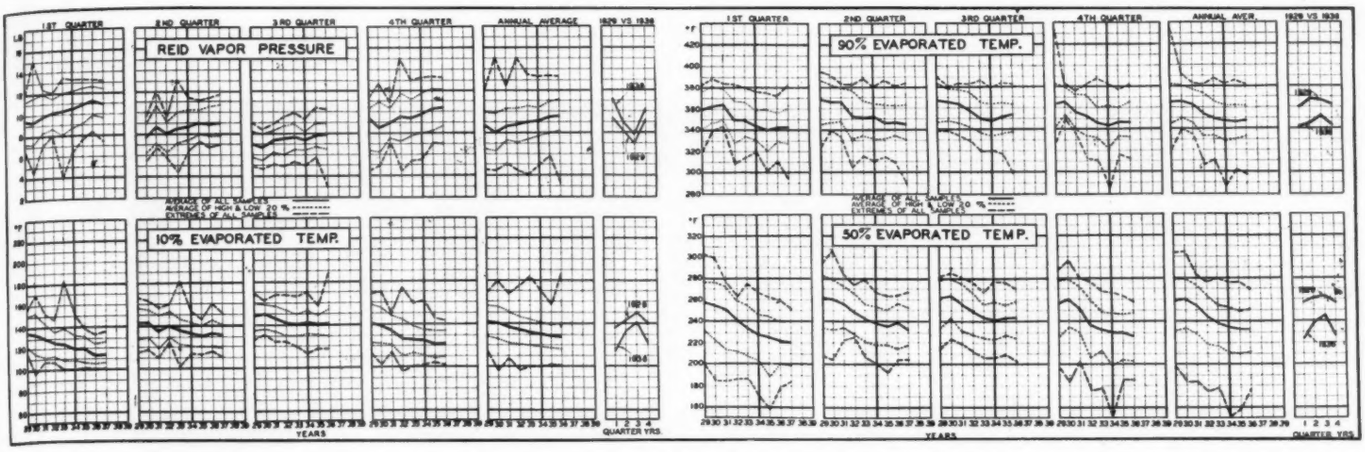

Fig. 3 and Fig. 4—Trend of volatility characteristics—averages of all motor fuel grades from the mid-western portion of the United States

perature of housebrand gasolines has remained constant at about 343° F. Seasonally there are only minor shifts except that the 90 per cent point of third quarter gasolines has increased slightly. From Figre 4 a slight tendency toward seasonal variation of the 90 per cent point of housebrand gasolines has become apparent since 1934, while there is a pronounced seasonal variation in premium gasolines, with none whatever for third grade gasolines. On the average, premium gasolines have developed markedly lower 90 per cent points than

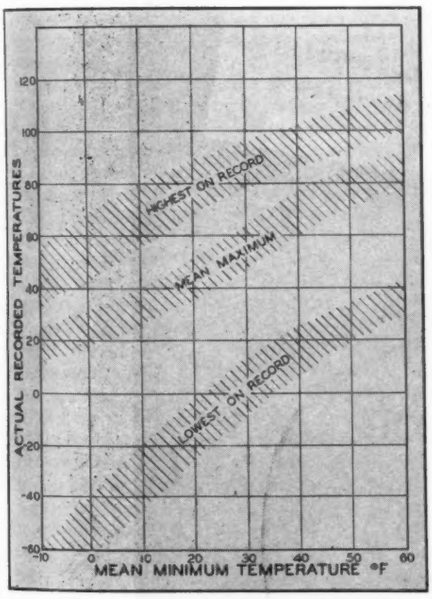

Fig. 6—Correlation of extreme temperature data with mean minimum

housebrand gasolines, while third grade gasolines have much higher 90 per cent evaporated temperatures.

Season Control of Gasolines

Although it is not exactly accurate, one cannot help being impressed by the way in which gasoline marketers have apparently paced their changes in quality of housebrand gasoline by corresponding earlier changes in the quality of premium gasoline. If this relationship continues, the premium gasolines of today with their very low 50 and 90 per cent points and their pronounced seasonal variations at the same points foretell a continued trend toward greater volatility and a much wider use of seasonal control of mid- and final-boiling points.

The climatic studies required for the development of seasonal gasolines have also been applied to a very important problem connected with the lubrication of automotive engines. As automotive engines, because of increased speed and decreasing clearances, became more sensitive to the viscosity of lubricating oils, it becomes necessary to make seasonal oil changes with greater accuracy.

Car manufacturers, realizing this situation and under the need of educating the public to the importance of having the correct viscosity oil in the crankcase under various atmospheric temperatures, stress this point in their instruction books. By means of graphic illustrations involving thermometers, the different S.A.E. numbers are recommended between definite temperature limits

To the car owner such instructions create the problem of determining when these temperatures prevail in the area in which the vehicle is operated. The public is intensely interested in weather, but very few people have anything like an accurate knowledge of actual daily temperatures. Much less do they know in any given locality when a certain range of temperature will prevail. The result is the S.A.E. numbers are chosen by the whim of the purchaser or the guess of the service station attendant.

Realizing that these temperature ranges would occur between different dates at the various latitudes, the authors endeavored to evolve a scheme by which seasonal temperatures could be converted to a calendar basis. This the car owner can more readily understand.

Long time weather records of the U. S. Weather Bureau were used and the monthly mean minimum temperatures of the reporting stations in the Missisippi drainage basin were plotted with respect to latitude and time. The mean minimum figures were chosen because of the importance of viscosity in cold starting. From the points plotted a family of curves could be drawn (Figure 5) by means of which the mean minimum temperature could be determined for any location at any time of the year.

To determine the probable extreme range that would be encountered at various mean minimum temperatures the monthly mean maximum and the monthly highest and lowest on record were plotted (Figure 6) with the monthly mean minimum as the abscissa. The zones represent variations with localities. This in conjunction with Figure 5 ties in the complete temperature ranges with time. For example, when the mean minimum is 20° F. the average lowest on record is —10° F. and the mean maximum is +50° F., essentially the range specified for the use of 10 W. By reference to Figure 5 it can be determined with reasonable accuracy just when this may be expected at any point in the geographical area under consideration.

High Altitude Areas

In localities at high altitudes atmospheric temperatures are markedly lower than for sea level points of the same latitude. The formula on Figure 5 shows a method of determining the sea level latitude whose seasonal minimum temperatures correspond with those of the elevated area. Thus for a territory at 6,000 feet at 40° latitude, the sea level latitude of corresponding seasonal temperatures is at 45.9° north latitude. By sea level is here meant all points at or below 2,000 feet elevation.

To make these data useful in the hands of the service station attendant, who has more to do with the accomplishment of correct lubrication than

(Continued on Page 63)

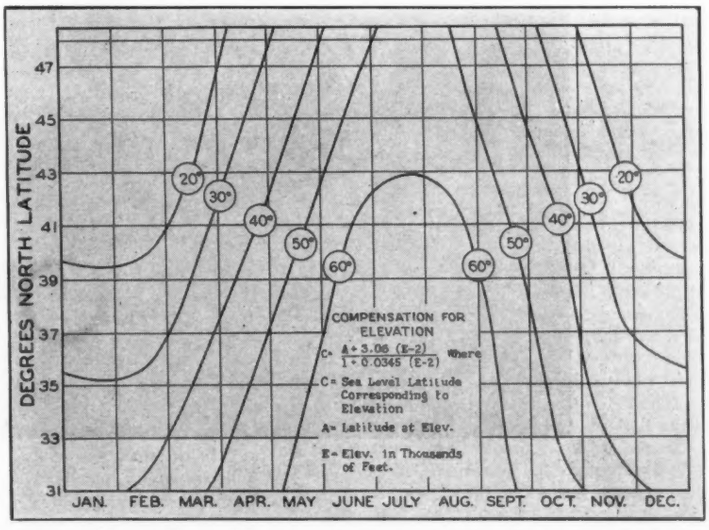

Fig. 5—Annual mean minimum temperature cycles for the Mid-Continent. (Latitude—Central Texas to Canadian line)

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Improper Acidizing Presents Desalting Problems to Refining Industry

By Gustav Egloff, E. F. Nelson, C. D. Maxutov and Charles Wirth III
Universal Oil Products Co.*

The treatment of emulsified crude oils has been a problem for years in the petroleum industry. Until comparatively recently various methods of settling with and without chemicals have been used with indifferent success. With the advent of acidizing wells, emulsified crudes have been produced which add considerably to the need for improved methods of treatment. The presence of large quantities of salts in the oils from acidized wells has presented new problems to the industry.

The use of hydrochloric acid in the well treatments has caused the formation of sodium, magnesium, and calcium chlorides by interaction with the limestones. These salts dissolve readily in the water normally present in the oil, and they are therefore incorporated in the emulsified oil. The crystalline salts which have also been found in the oil are prevented from settling by protective films such as asphalt, resins, and petrolatum. In some instances, hydrochloric acid has been found. The salts may be present in crude oil in amounts ranging from a few pounds to over 750 pounds per 1,000 bbls. of oil.

The transportation of these crude oils through pipe lines has led to erosive and corrosive effects which are a tremendous cost to the petroleum industry. During 1937, more than 1,200,000,000 bbls. of crude oil will be transported through pipe lines. Of this quantity approximately 10,000,000 bbls. will be water, and considerably more than 50,000,000 pounds will be salts. If the crude oils were treated at the producing wells to remove the salts and water, an appreciable savings would be possible. The treatment would not be difficult since it has been found that these oils are more readily treated as they are produced than after the aging and more stable emulsification that occurs before they reach the refinery. Since great costs are involved in the use of these salty crudes at the refinery, those treated oils which would be essentially free of salts would naturally command a premium.

The real added costs lie in refining salt-containing crude oils. Severe corrosion of refinery equipment in both topping and cracking installations has appeared in many refineries. Chemicals such as ammonia, lime, and caustic have been used to advantage but at a great expense. The corrosion is most evident in preheat exchangers, crude still tubes, cracking coils, fractionating towers, and condenser equipment. In addition, deposition of the salts throughout various sections of the equipment has caused a loss of efficiency and frequent shut-down periods. The loss of on-stream time has in some instances been particularly acute. The quality of the products from salty crude oils has been affected especially in residual fuel oil and asphalt.

A.I.M.E.—First half of a paper presented before the American Institute of Mining and Metallurgical Engineers, October 8, 1937, Oklahoma City

A number of explanations have been made of the high corrosiveness of these salty crudes. The calcium and magnesium chlorides are known to hydrolyze readily to form hydrochloric acid. The acid formed in this manner, together with that present in the crude, is believed to cause the excessive corrosion. In addition, some chlorinated hydrocarbons are possibly formed during acidizing which under topping or cracking conditions decompose to yield corrosive products. However, corrosion in high-temperature regions has been normally attributed to sulfur and its compounds, while hydrochloric acid and its salts were thought responsible for corrosion in the condensing sections. All of the available evidence indicates that corrosion in high-temperature zones is considerably aggravated by the presence of hydrochloric acid or salts which may produce them by hydrolysis or decomposition. This idea is well illustrated by the data of R. E. Puckett[1] in which he rules out sulfur or its compounds as the sole cause. He assigns the major responsibility of the high corrosion to free acid and its salts, based essentially on analyses of the corrosion products. He suggests the possibility of an oxidation-reduction cell due to the presence of salts as accelerating the corrosion. The action of the acid upon iron sulfide with liberation of hydrogen sulfide to cause further damage may be an important factor.

We have theorized somewhat regarding the accelerated corrosion encountered in cracking still tubes. The hydrated salts of calcium and magnesium chlorides probably melt in their own water of crystallization and hydrolyze, generating hydrochloric acid. This acid will be very corrosive at the high temperatures encountered since the water exists in the liquid phase due to its low vapor pressure and the comparatively high existing pressure on the system. If this hydrolysis went to completion, we might expect to find considerable percentages of calcium and magnesium sulfides as well as iron chloride present in the coke from the tubes.

Some evidence has been obtained which indicates that the presence of chlorides or hydrochloric acid appreciably affects the formation of hydrogen sulfide. In a commercial cracking installation a Michigan topped crude was charged to the furnace tubes containing approximately 150 pounds of salt per 1,000 bbls. The gas produced from this charge contained 1,100 to 1,200 grains of hydrogen sulfide per 100 cubic feet, and severe corrosion throughout the unit was evident. With the installation of a settler for the removal of salt, the salt content of the charge was reduced to 40-60 pounds per 1,000 bbls. The hydrogen sulfide content of the gas was reduced to approximately 400 grains per 100 cubic feet. It is possible that the salts or the acid may have a catalytic effect upon the decompo-

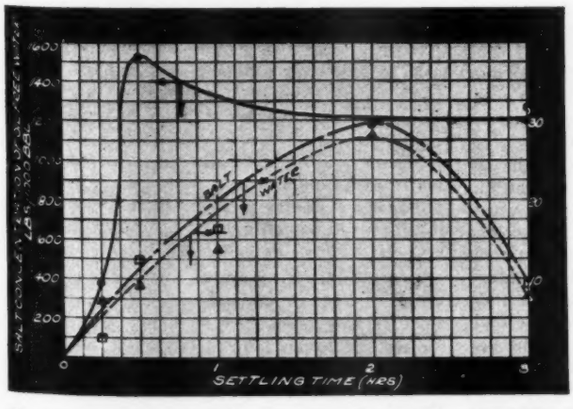

Fig. 1—Per cent of total salt removed with oil. Free water also per cent of total water withdrawn from bottom

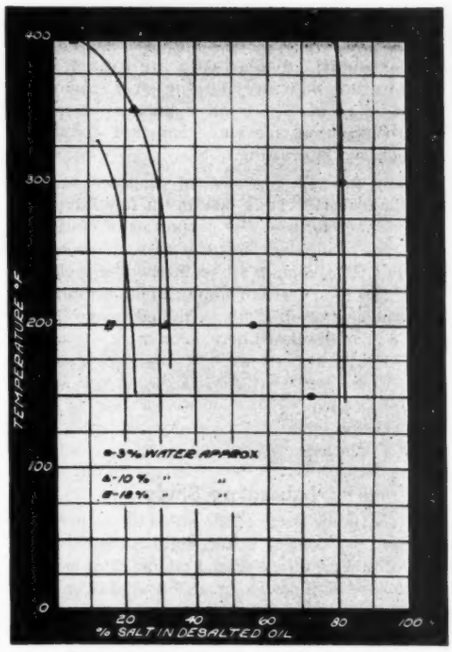

Fig. 2—Temperature versus per cent in desalted oil

*Presented under authors' title, "Crude Oil Desalting."

[1] The Oil and Gas Journal, Sept. 23, 1937, p. 45.

sition of the sulfur compounds. No direct evidence of this action has as yet been obtained.

In order to emphasize the importance of the problem, salt analyses of typical crude and topped crude oils from various and numerous sources are shown. In Table 1 the salt contents of crude oils reach a figure as high as 780 pounds per 1,000 bbls. The oils are representative of almost every section of the country. Similar data are presented for topped crude oils and charging stocks for cracking installations. The relative amounts of calcium and magnesium chlorides compared to sodium chloride are interesting.

Many processes have been proposed to dehydrate and desalt crude oils and a few have gone into commercial use. The properties of emulsified and salty crudes vary widely as to their amenability to treatment. No one method is most economic for all crudes. In some cases a combination of methods is used. A few of the commercial processes will be discussed here, such as:

1. Heat and pressure.
2. Chemical.
3. Electrical.
4. Centrifugal.
5. Filtration.

Laboratory Study

A laboratory study of the effect of temperature, pressure, per cent of water, emulsification, conditions of mixing of water and oil, depth of settling, and time of settling was made on a Mid-Continent topped crude.

A jacketed batch salt settler (38 inches high, 7 inches I.D.), having four drawoffs on the side and one at the bottom has been used in this investigation. The mixture was discharged by a pump through an electrically heated preheater to the top of the settling vessel. The heating and maintaining of the temperature of the vessel was accomplished by recirculating oil from the jacket through another coil in the preheater. Both of these systems were connected so that the pumps would pick up the oil from the bottom and discharge it at the top. This method of recirculation was especially important in the case of the water-oil mixture to secure thorough mixing. To provide better agitation of water and oil, an orifice mixer with a pressure drop of 15 pounds per square inch was installed on the discharge side of the pump at the point of entering the preheater. The charging was followed by an agitation period, and oil was recirculated through the preheater and discharged through the top of the vessel. The pressure was partly built up due to vaporization during this period, and finally brought up to the desired value with the use of nitrogen.

The oil was allowed to settle at constant conditions of temperature and pressure. At the close of the settling period, samples were taken from different levels, beginning with the top drawoff, water or emulsion from the bottom drawoff, measured and analyzed for water and salt content.

Twenty-six runs were carried out covering the temperature range from 150 to 400° F., pressure from 50 to 300 pounds per square inch, agitation time from one half hour to four hours, settling time from 15 minutes to 24 hours, and per cent water added from 2 to 20.5 per cent by volume. One run was also made in which the gravity of water was increased by the addition of a small amount of salt in order to emphasize the gravity separation. In every run all the conditions were kept constant except the one whose effect was being studied.

Agitation

It has been found that a definite degree of agitation should be obtained in order to bring about an intimate contact between water and salt particles. When and if agitation is too violent, there is danger of dispersing water in extremely fine globules throughout the body of oil which may result in stabilization of the emulsion. As a consequence, a very poor separation of oil-free water will occur on settling with the formation of an emulsion layer varying in thickness, per cent water and salt, depending on the conditions. This layer is located between the desalted oil and the oil-free water. Furthermore, the desalted oil would have a much higher water content than if less agitation were used.

Settling

The amount of salt water withdrawn from the bottom drawoff increases with the increase of settling time, and the concentration of salt in it at first increases, then decreases. When the oil-free water was withdrawn at various time intervals the concentration of salt in it reached the highest value after 30 minutes of settling. Then it declined slowly, and finally attained a constant value. This fact indicates that the water globules, carrying higher salt contents, coalesced in a relatively short time, followed by the globules of lower salt concentrations. The amount of water withdrawn from

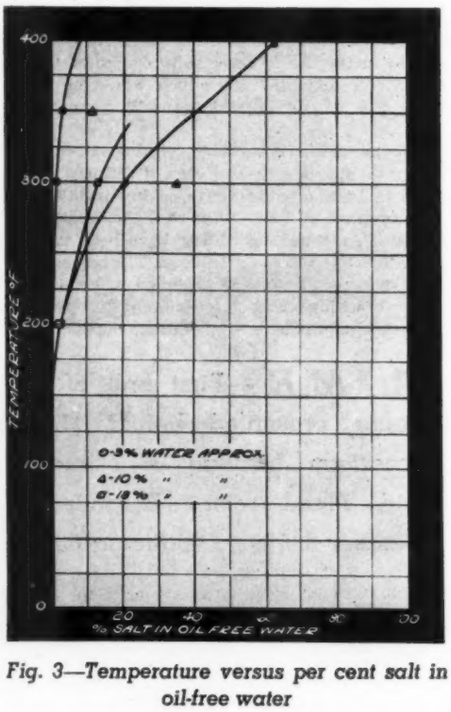

Fig. 3—Temperature versus per cent salt in oil-free water

the bottom per interval of settling time reached its highest value after two hours of settling at the conditions of 400° F. and 300 pounds pressure. At conditions of 200° F. and 50 pounds pressure, such poor separation of oil-free water was obtained that the effects described above could not be determined.

The per cent of total salt in the oil-free water and the amount of oil-free water per time interval are plotted for 400° F. and 300 pounds pressure on Figure 1.

The percentages of water and salt in the desalted oil decreases with the increase in settling time. At low temperatures the per cent of water seems to decrease more rapidly than the per cent of salt. This indicates that the salt was not completely dissolved in water due to low temperature which did not affect the asphaltic or paraffinic films surrounding the salt crystals. At higher temperature this effect is reversed, that is, the per cent of salt decreases more rapidly than the percentage of water on account of the absence of films surrounding the salt crystals. In such cases the salt concentration curve falls rapidly with a tend-

(Continued on Page 63)

TABLE 1—SUMMARY OF INORGANIC ANALYSES ON CRUDES AND CRACKING STOCKS

Location; type—	Pounds per 1,000 bbls. $CaCl_2$	$MgCl_2$	NaCl	All Cl as NaCl
Pennsylvania:				
Crude	trace	trace	trace	trace
Michigan:				
Crude	17 3	4 5	none	2 2
Crude	....	....		187 0
Crude	neg.	neg.		25 0
Crude	trace	trace		25 0
Average				59 8
Topped crude	....	....		174 0
Kentucky:				
Crude	17	15	58	44 0
Crude	neg.	neg.		90 0
Crude	104	11 2	204	13 5
Crude	17	15 0	17	318 0
				54 0
Average				107 4
Topped crude	....	....		85 0
Topped crude	....	....		66 0
Topped crude	....	....		97 0
Topped crude	17	14	16	51 0
Average				74 8
Kansas:				
Crude	38 1	6 7	46 0	91 0
Crude	....	....	....	92 0
Arkansas:				
Crude	34 6	1 5	44	80 0
Mid Continent:				
Crude	....	....		176 0
Crude	....	....		138 0
Crude	7	26	74	102 0
Crude	....	....		73 0
Crude	....	....		54 0
Average				108 6
Topped crude	42	7	117	168 0
Topped crude	....	....		148 0
Topped crude	34	4	145	185 0
Topped crude	....	....		143 0
Topped crude	....	....		125 0
Topped crude	....	....		121 0
Topped crude	....	....		120 0
Topped crude	....	....		117 0
Topped crude	....	....		114 0
Topped crude	....	....		112 0
Topped crude	....	....		103 0
Topped crude	....	....		101 0
Topped crude	....	....		98 0
Topped crude	....	....		89 0
Topped crude	....	....		89 0
Topped crude	....	....		89 0
Topped crude	....	....		85 0
Topped crude	....	....		84 0
Topped crude	....	....		81 0
Topped crude	....	....		79 0
Topped crude	....	....		76 0
Topped crude	....	....		74 0
Topped crude	....	....		69 0
Topped crude	....	....		67 0
Topped crude	....	....		64 0
Topped crude	6	3	49	58 0
Topped crude	....	....		54 0
Topped crude	26 0	2 2	16 0	43 4
Topped crude	....	....		42 0
Average				96 8
East Texas:				
Crude	19	trace	none	2 2
Crude	....	....		38 0
Crude	....	....		13 0
Average				17 7
West Texas:				
Topped crude	48 5	6 7	48	103 0
Topped crude	....	....		107 0
Average				105 0
Crude	....	....		0 0
Crude	....	....		445 0
Crude	....	....		273 0
Crude	....	....		0 0
Crude	....	....		0 6
Crude	....	....		0 0
Crude	....	....		3 2
Average				103 1
New Mexico.				
Crude	....	....		0 0
Topped crude	....	....		35 0
Montana:				
Crude	....	....		37 0
Crude	....	....		368 0
Crude	....	....		152 0
Crude	....	....		0 0
Crude	32 9	9	none	36 6
Average				118 7
Wyoming:				
Crude	....	....		0 0
Oregon:				
Crude	neg.	neg.		7 4
California:				
Crude	15 6	trace	none	0 8
Crude	27 7	7 5	25	60 6
Crude	....	....		10 0
Crude	....	....		0 0
Crude	....	....		44 0
Crude	....	....		0 0
Crude	....	....		0 0
Crude	....	....		2 5
Average				15 0
Argentina				
Crude	52 0	3 7	704	764 0
Crude	....	....	....	797 0
Average				780 5
Persia:				
Crude	trace	neg.	....	260 0
Topped crude	neg.	neg.	neg.	neg.
Russia:				
Crude	trace	trace	....	73 2

Gravel-Packed Liners Reduce Well Caving and Sand Production

By T. P. SANDERS

In the San Joaquin Valley of California the Texas Co. is completing all wells with slotted liners set in large-diameter holes, the space around the liners being filled with screened river gravel. While gravel packing of liners is not a new idea in the industry, its acceptance in this area as standard practice by a major company represents an important advancement in production technique.

It has long been the theory that a large-diameter hole in the productive strata would tend to increase productivity, while the use of gravel would prevent caving. Gravel has been used in water wells for years, but its use in oil wells has been discouraged because of the difficulty of reaming out a large-diameter hole at great depths and of packing gravel around a liner in such a cavity. In the past few years several inconspicuous experiments of this kind have been made. At Oklahoma City gravel-packed liners tried in several Wilcox wells were not eminently successful, possibly because crushed limestone was used instead of graded gravel. In the granite wash area of the Texas Panhandle greater success resulted, but a need was felt for a safe and convenient method of placing the gravel. By developing such a method the Texas Co. has removed this type of completion from the experimental stage.

Gravel packing of the San Joaquin wells was first undertaken by the company more than six months ago. Most extensive application has been in the Kern Front field near Bakersfield, where sand conditions are especially severe and have caused excessive pumping and remedial costs, and in section 32 of Midway-Lakeview field near Taft. The chief reason for adopting the practice was not to increase production but to avoid trouble due to sand production and caving. In this respect the success of the work is clearly indicated by the fact that clean-out time has been reduced to one-seventh of the usual amount for wells of this area. In other words only 20 hours is consumed in bailing sand out of a gravel-packed liner during a period when 150 hours is spent in cleaning out a liner set in the usual manner. It is apparent that this represents a considerable saving when the clean-out crew's time is valued at about $10 per hour, and when lost production during down time is to be considered.

Trials have been conducted by the Texas Co. to determine the best size hole to use in the productive zone, the most satisfactory size of liner to set, the most efficient kind and size of gravel, and the most economical method of placing it. Much headway has been made, but most of these items are yet to be definitely determined. The work has been confined to wells from 2,000 to 3,000 feet deep, and all have been completed as pumpers, since they are in partially-depleted or low-pressure areas.

Following California state regulations in drilling the wells, a water string is cemented above the productive zone in each well, and the shut-off is tested. The productive strata is then drilled to the selected total depth, and underreaming is commenced. For this purpose a wall scraper is used on the drill pipe. The hole is underreamed from a few feet below the shoe of the water string to the total depth, a distance varying from 50 to 250 feet. It is a question of economics how large the hole should be made. Diameters up to 30 inches have been tried, but 16- to 20-inch holes are generally used because it appears that the chief purposes are served with a smaller expenditure. Liners used are usually 6⅝-inches O.D., but in some cases where 11¾-inch water strings were set, 8⅝-inch liners have been run. Best results have been obtained using screened gravel of one-fourth to three-eighths inch mesh. Sizes up to three-fourths inch mesh have been used.

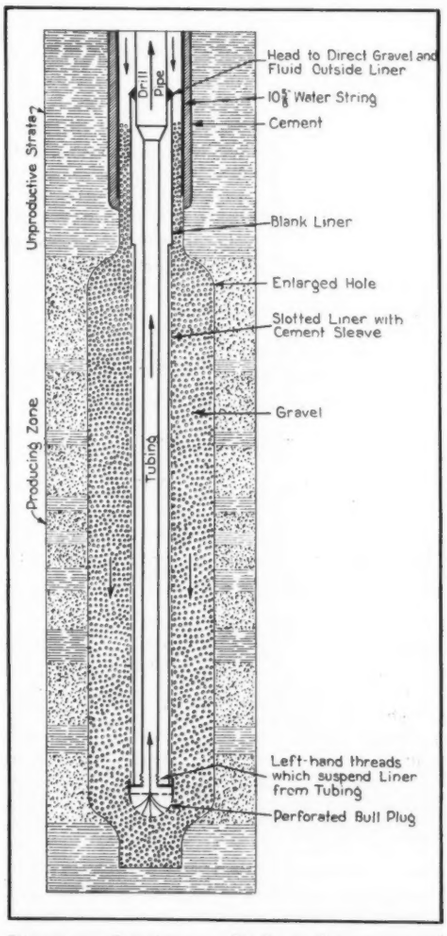

Diagram showing method used in suspending the perforated liner while gravel is packed around it. Arrows indicate the course of the gravel-placing fluid

Three methods of placing the gravel around the liner in the reamed hole have been tried. First method was that of placing a measured quantity of gravel in the hole before running the liner. The liner was run with closed bottom and a sharp shoe, but it was found impossible to work it to the bottom of the well. On the next well a full string of pipe, with lower joints slotted, was run to the bottom. Light, viscous mud was pumped down the outside of the string, and gravel was added to the mud. The mud passed through the slots at the bottom of the pipe and returned to the surface, leaving the gravel in back of the pipe in the oil strata. The gravel was then washed with water. This method was successful, but since it required a full string of pipe a cheaper way was sought. As a result a practice was adopted whereby the liner could be run on the drill pipe and the gravel placed, as before, by reversed circulation.

Slotted liners are used which contain a cement sleeve. The sleeve keeps the slots closed until the gravel is in position, then it is drilled out, leaving the slots uncovered. The liner is made up with its slotted section corresponding to the thickness of the pay. Above this a blank section 100 to 150 feet long is added to extend up into the water string. The liner is not held by its top when it is run. Instead, a string of tubing extends from the drill pipe down through the liner and screws into a plate at the bottom of the liner by means of left-hand threads. This joint is the only connection between the drill pipe and liner. The plate into which the tubing is screwed is held by a collar. Below this plate is a perforated plate, of the same mesh as the slots in the liner. Below the perforated plate is a perforated bull plug.

At the top of the liner, a hood on the drill stem prevents mud and gravel from getting in the space between the tubing and liner. The liner is centered in the water string by means of steel fins.

During the placing of the gravel the liner is suspended from the drill pipe with its lower end a foot or two off bottom. Mud is pumped down the outside of the drill pipe, and gravel is lubricated into this stream in batches of 5 to 10 cubic feet. Mud used consists only of weight material and water. It must be sufficiently viscous to carry the gravel, and yet it must be easily washed out after the gravel is in place. A Stormer viscosity of 25 to 35 has been found satisfactory. The gravel-carrying fluid goes to the bottom of the well outside of the liner. Here the fluid passes through the perforated bull plug and proceeds upward through the tubing and drill pipe to the surface. The gravel accumulates outside of the liner. Enough gravel is run to fill the calculated space, and 6 to 10 per cent is added to take care of irregularities and to fill the space behind the blank liner. When the gravel is in place, water circulation is substituted for mud circulation. This is continued until the water returning to the surface is clean. In this washing operation the cement sleeve in the perforated liner is of great value, for it forces the water to pass around the bottom of the liner, thereby cleaning the bed.

The cost of a 3,000-foot well completed with a gravel-packed liner is 5 to 10 per cent greater than when completed in the customary manner. To date the benefits derived have included reduction of pumping trouble and clean-out time.

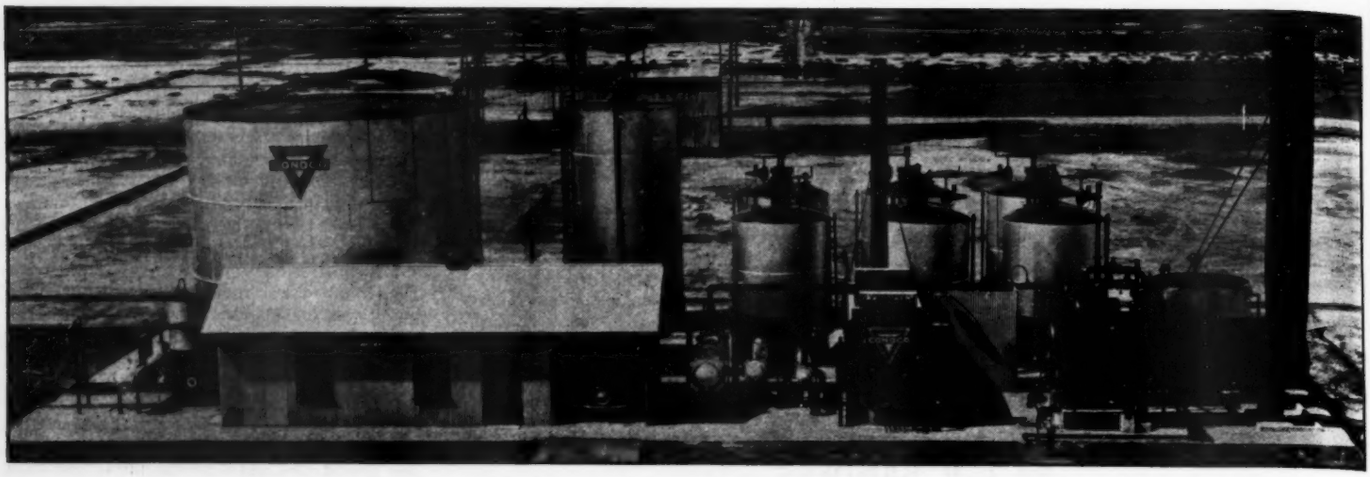

Fig. 1—Central dehydrator plant employing a direct-fired heater

Utilization of Heat in Central Crude Dehydration Plants

By R. W. FRENCH
Continental Oil Co.*

The heating of crude oil emulsions during treatment to reduce water content is very common, particularly in central plants. Many types of heat source are now in use with converted fire-box boilers, tubular boiler heaters, small vertical boiler heaters, and various waste-heat exchangers supplanting the use of high-pressure live steam with its low efficiency and attendant high cost.[1] The direct-fired pipe still type heater with relatively high efficiency may provide an economical source of heat for a central plant whose throughput is large and whose probable life will be long enough to realize the full benefit of operating savings.

Usual dehydrator plant operation provides a flow of hot clean oil, hot waste water, and often exhaust steam from circulating pumps, accompanying the flow of emulsion. From a thermal viewpoint the heat content of the first three fluids may be thought of as by-products whose value is lost unless proper heat exchange equipment is installed to utilize them. Also, with few exceptions, it is desirable that the clean crude oil run to field storage at the lowest practicable temperature to minimize evaporation with its corollary volume and gravity loss. Hence, the installation of heat exchange equipment, by taking advantage of this favorable situation, may yield considerable fuel saving as well as over-all operating economy.

Installation Description

The plant used as an illustration herein was reconstructed from an older, live-steam plant which had been in use for 10 years. Although much of the older equipment was necessarily retained, the construction of a direct-fired pipe still type heater was followed by the installation of fairly complete heat exchange equipment and controls. Because a turbine-driven water pump used for lease emergency and fire service required the use of one boiler in service, and the former steam pumps were capable of serving the new plant, two boilers of the original four were included in the new plant. The exhaust steam from the pumps serves to raise the temperature of the emulsion entering the heater. Of course, in a completely new plant without external steam requirements the pumping might advantageously be accomplished by electrical, or internal-combustion prime movers with the tube type heater furnishing all primary heat.

***A.I.M.E.*—Presented before fall meeting of Petroleum Division, Los Angeles, Calif., October 1, 1937**

Plant Capacity

Although the present daily volume of clean oil dehydrated averages approximately 3,500 bbls., the plant normal capacity is 4,500 bbls. and amounts as high as 7,000 bbls. have been handled. The average water content of the emulsion furnished the plant is 50 per cent, but this quantity is reduced more than half by the settling action which takes place in the supply and decanting tank, and gun barrel. Wet gravities of gun barrel discharge range ordinarily from 16 to 24 degrees A.P.I. with the clean oil averaging 27 degrees A.P.I.

As shown in Figure 1, the plant is laid out in a compact manner to minimize piping expense and upkeep, and to facilitate operation. The supply tank, gun barrel, pump house, heat exchangers, heater, and treaters may be identified easily. All piping except the steam lines is in concrete trenches covered with subway grating, and insulation is provided wherever desirable. Automatic control and recording devices are in general use, including pressure regulators on plant pumps, stroke counter on recirculating pump, liquid-level controllers on treaters, thermostatic control on heater fuel, back-pressure regulator on treater discharge main, and various recording temperature and pressure gauges.

Movement of the fluids involved through the plant is shown in the schematic flow diagram, Figure 2. From the supply tank the crude oil emulsion is pumped through the first pair of heat exchangers which utilize the heat content of the waste water efflux from the treaters. As the emulsion proceeds through the gun barrel some waste water is freed by the action of the heat and chemical injection. The circulating pump then forces the emulsion through a heat exchanger which makes use of the heat in the clean oil from the treaters. The lowering of the temperature of the clean oil is also important since it decreases the size of exchanger and volume of cooling water necessary in the final unit which reduces the clean oil to proper shipping temperature. In some installations this would mean corresponding decreases in the cost of cooling towers and pumping equipment.

Flow Through Heaters

Immediately following the clean oil exchanger are two exchangers serving to transfer the latent heat of the pump exhaust steam to the emulsion. By this time the emulsion has reached a temperature close to 150° F., which is increased to around 177° F. in the heater. Thermostatic temperature control operates to fire the heater at rates which will maintain constant the proper temperature for treater intake. After the emulsion has proceeded through the first four treaters, the cleaned oil passes through the two rerun treaters which re-

*Paper presented under the author's title, "Heat Utilization in Dehydrator Plants."

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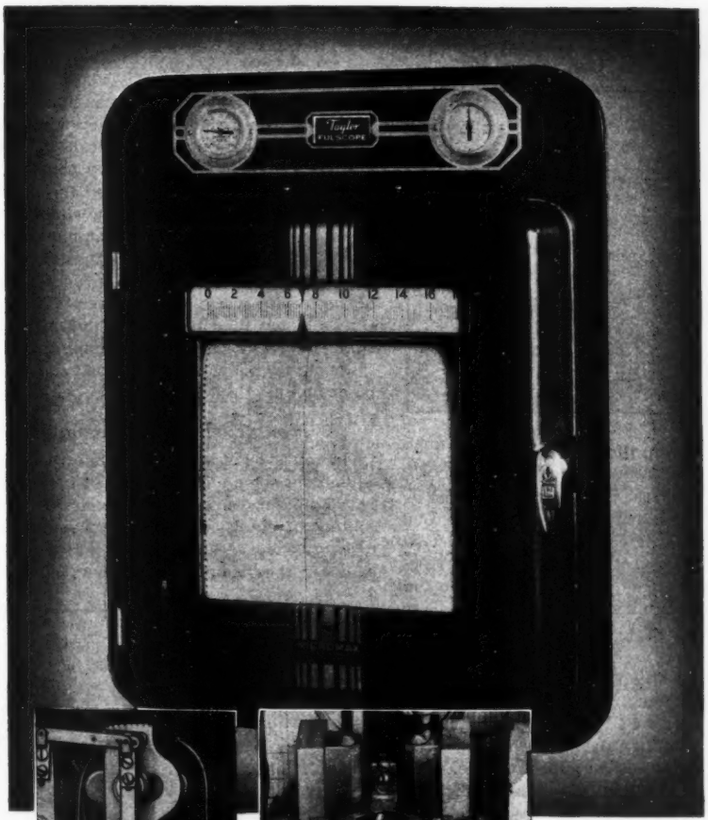

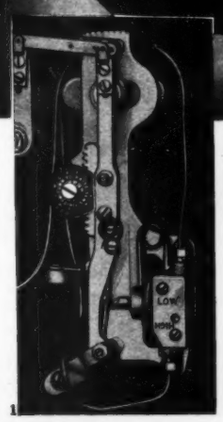

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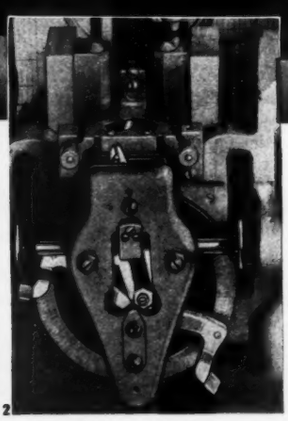

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duce the water content from around 1¾ per cent to one-half of 1 per cent. From these treaters the clean oil runs to the shipping tanks after giving up its excess heat in the clean oil exchanger and cold water exchanger respectively. A recirculating pump maintains movement of some clean oil from the treaters back into the intake of the first run treaters. This procedure was found necessary to maintain optimum treater functioning.

Heater Data

The direct gas-fired heater used in this plant is of the tube still type familiar to refinery practice. Constructed of salvaged drill pipe and boiler flues in a steel and brick setting, its cost was slightly more than one-quarter of that necessary to install live-steam equipment to accomplish the same heating. A pressure-relief valve provides protection

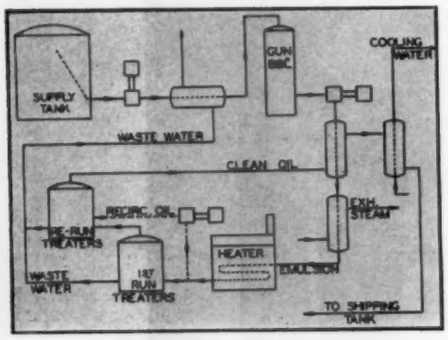

Fig. 2—Schematic flow diagram

against emergencies; the sloping furnace floor is equipped with a drain line and trap in case of tube failure; a water line is connected to the inlet so that the coils may be protected in case of circulation failure; and a steam line is connected to the furnace to smother fire if necessary.

The heater was designed to supply 1,500,000 B.t.u. per hour at conservative ratings, but has yielded over 2,000,000 without difficulty on occasion. Maximum heat intensity seldom exceeds 10,000 B.t.u. per square foot of heating surface, and the pressure drop through the heater at peak loads reaches 30 pounds per square inch. Heater efficiency as illustrated by Figure 4 varies from 70 to 78 per cent in the operating range. An incidental feature of this type heat source is that emulsion temperatures necessary for proper treater functioning may be from 10 to 15 degrees below those of live-steam plants as a result of the constant temperature maintained by this single, controlled source. A comparison of costs between this direct-fired heat source and a minimum-cost live steam installation yields very significant results. Total installed costs per 1,000,000 B.t.u. of output are $845 in the case of the direct-fired heater contrasted with $3,150 for the live-steam equipment with fuel costs, on the basis of millions of B.t.u. per hour output, of 6 and 21 cents, respectively. These savings in a direct-heat plant of the size under consideration are equivalent to an installation economy of $5,180 and an annual decrease in fuel expense of $1,840. Maintenance costs, also, on the direct-heat unit should be much lower.

Continuous-flow heat exchangers or recuperators of the counter-flow type are used in the plant discussed above to conserve and convert to useful purpose the economically available waste heat of various fluids. As shown by the typical flow chart in Figure 3 a total of 2,441,000 B.t.u. per hour or 65 per cent of the total heat supplied to the emulsion is contributed by these exchangers. Of this amount, 27 per cent is yielded by the waste water efflux, 32 per cent comes from the preliminary cooling of the cleaned oil, and the remaining 41 per cent is furnished by the condensing of exhaust

TABLE 1—PLANT HEAT BALANCE

		B.t.u./h	Per cent
Total heat value of plant fuel		5,220,000	100 0
A Boiler input:			
1. Heat used in pumping plus steam exchanger and radiation losses		1,251,000	24 0
2. Heat transferred through exhaust steam to emulsion		1,004,000	19 2
3. Boiler losses		1,270,000	24 3
Total		3.525,000	
B Heater input:			
1. Heat transferred to emulsion		1,308,000	25 1
2. Heater losses		387,000	7 4
Total		1,695,000	
C Heat balance of fluids:			
1. Heat input (A,2 plus B,1 above)		2,312,000	
2. Heat lost in discharge:			
Clean oil	928,000		
Cooling water	423,000		
Waste water	240,000	1,591,000	
3. Heat lost by radiation and conduction		721,000	

steam which is then available as boiler feedwater. Of course, these proportions vary with changes in emulsion throughput and composition, but in general their total remains a fairly constant proportion of the entire heat supplied the emulsion. If the exhaust steam were not available here, the other heat exchangers would supply about 40 per cent of the necessary heat, and it might then prove economically justifiable to take further advantage of the residue waste heat in the outgoing clean oil. Over-all heat distribution for the entire plant is summarized in Table 1 and emphasizes, from a thermal viewpoint, the disproportionate amount of plant fuel required by the boiler.

Heat Exchanger Calculations

In considering an installation of heat exchange equipment some of the factors of importance are: Throughput or velocity of fluids; gravity and water content of emulsion; entrance and exit temperatures given or desired for both fluids; probable values of the mean transmittance or heat transfer

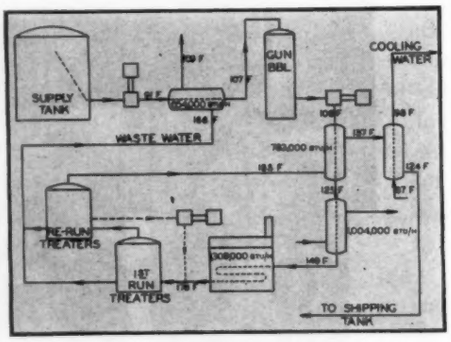

Fig. 3—Typical flow sheet showing heat supplied to emulsion

coefficient; area of heating surface; pressure losses; and effect of any corrosive influence. Of course, the throughput rates are usually established and with the fluid characteristics indicate the limits of size so far as pressure loss is concerned. Probable effective values of the heat transfer coefficient may be assumed from experience or obtained from the manufacturer who may also furnish data on temperature ranges and fluid velocity as well as pressure loss and corrosion effects. Since an infinite amount of heating surface would be required to utilize all the heat available, it is obvious that the economical amount to install is determined by consideration of the actual value per unit heat output in each instance.

Since calculations of heat transfer involving the interrelation of temperatures, velocities, surface areas, and variations in the heat transfer coefficient, etc., are subject to errors of at least 10 per cent, the following example will illustrate practical approximations. More exact and detailed mathematical treatment may be obtained from a study of various reference volumes.[2]

In the case of a counter-flow heat exchanger having 13,300 pounds hourly of 166° F. waste water available to use in heating 230 bbls. hourly of emulsion from 91 to 107° F., how much surface will be required and what will the exit temperature of the waste water be? The emulsion is 16.5 per cent water and gravity of the oil content is 27 degrees A.P.I.

Heat Required to Raise Emulsion 1° F.

The heat required by the water phase of the emulsion will be 16.5 per cent of the 230 bbls. hourly multiplied by the weight in pounds per barrel and by the specific heat in B.t.u. per pound as follows:

$$230 \times 0.165 \times 350 \times 1.0 = 13,300 \text{ B.t.u./h}$$

The heat required by the oil is calculated in the same manner but using weight per barrel and specific heat for 27-degree A.P.I. oil at a mean temperature of 99° F.

$$230 \times (1.0\text{-}0.165) \times 312 \times 0.458 = 27,500 \text{ B.t.u./h}$$
$$13,300 - 27,500 \doteq 40,800 \text{ B.t.u./h}$$

Then the total heat required to heat the emulsion is,

$$(107\text{-}91) \times 40,800 = 654,000 \text{ B.t.u./h}$$

Heat Lost by Waste Water Per 1° F.

$$13,300 \times 1.0 = 13,300 \text{ B.t.u./h}$$

Hence, the probable temperature drop of the waste water with 100 per cent effectiveness would be,

$$\frac{654,000}{13,300} = 49° \text{ F.}$$

However, since experience indicates the net effectiveness is about 85 per cent $\frac{49}{0.85} = 58°$ F.

Thus, 166-58 or 108° F. will be the exit temperature of the waste water.

The mean temperature difference (Δt_m) may now be calculated by use of the following equation:

$$\Delta t_m = \frac{(T_1 - t_2) - (T_2 - t_1)}{2.303 \log \left(\frac{T_1 - t_2}{T_2 - t_1}\right)}$$

Where

T_1 = entrance temperature of warmer fluid, F
T_2 = exit temperature of warmer fluid, F
t_1 = entrance temperature of cooler fluid, F
t_2 = exit temperature of cooler fluid, F

In this case:

$$\Delta t_m = \frac{(166 - 107) - (108 - 91)}{2.303 \log \left(\frac{166 - 107}{108 - 91}\right)} \text{ or } 34° \text{ F.}$$

For frequent use, however, a graph of this re-

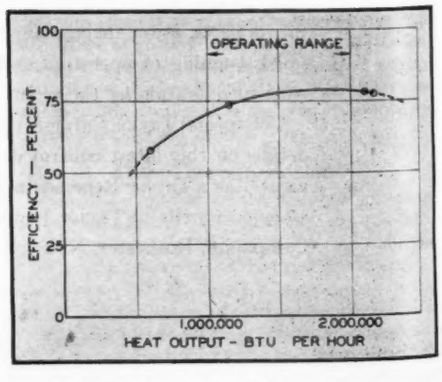

Fig. 4—Efficiency of direct-fired heater

lation plotted through the proper ranges will prove to be a time saver.

Next, the required surface is found (using a heat transfer coefficient, K, of 25 for the type exchanger under consideration) by dividing the hourly heat supplied the emulsion by the product of the transfer coefficient and mean temperature difference.

$$\text{Area} = \frac{654{,}000}{25 \times 34} \text{ or } 770 \text{ ft.}^2$$

This same relation, of course, is used to calculate the heat transfer coefficient in comparing performance results of various operating units with given surface areas.

Value of Results

Tangible improvements in operating effectiveness of the new plant under discussion are twofold. The average cut of the cleaned oil has been reduced from 1.75 to 0.5 per cent. The gravity has been raised to such an extent that the average price per barrel received for all lease oil is more than 8 mills higher, corresponding to a net increase in revenue of $980 monthly. And additional gravity improvement is expected to follow the early installation of facilities which will further cool the cleaned oil through the use of sea water. The economies described in the foregoing paragraphs may be summarized for the subject plant as follows:

1. Installation saving, compared to live-steam unit, of $5,180.
2. Fuel economy of 49 per cent.
3. Maintenance expense reduction of 5 per cent.
4. Net gain from improved quality of oil of $980 monthly.

These savings acted to lower unit treating cost 10 per cent, and when combined with the revenue increase will return the cost of the plant reconstruction in 17 months.

Acknowledgements

The writer wishes to thank W. K. Kirby, consulting engineer; E. K. Parks, Standard Oil Co. of California, and C. H. Smith of C. F. Braun Co. for their suggestions in the preparation of this paper.

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Desalting Problems

(Continued from Page 58)

ency to become asymptotic to the horizontal axis at a certain value determined by the nature of the emulsion. Little evidence of stratification was found in the body of settled oil having water and salt rather evenly distributed with a tendency toward slightly higher salt concentrations in the upper layers.

Effects of Temperature, Water Added, and Pressure

The effects of temperature and per cent water added on salt removal are very closely interwoven. When either factor is increased the salt content of the oil is decreased. Thus, to obtain a desired degree of desalting the temperature may be increased and the water decreased or vice versa. From Figures 2 and 3, it appears that the optimum per cent of water added is 10 per cent by volume of oil, and the optimum temperature is 400° F. That is, if a definite weight of salt is removed at 400° F. and 10 per cent water, much higher temperatures must be used with 3 per cent of water to obtain the same desalting effect. At temperatures above 500° F., the critical conditions for water will be approached

TABLE 2—EMULSION TEST DATA

Temp. °F.	Pressure lbs./sq. in.	Agitation time (hours)	Settling time (hours)	% H_2O added (by vol.)	% H_2O in settled oil (based on oil)	% Salt in desalted oil (analysis)	% Salt removed excluding emulsion layer	% H_2O in emulsion layer (analysis)
150	275	1 0	1 5	3 0	1 8	71 6	33 8	26 0
150	275	1 0	1 5	10 0	0 8	10 0	90 0	51 0
200	275	4 0	1 5	3 0	1 2	54 3	45 6	40 0
200	275	0 75	1 5	10 0	1 5	30 7	74 5	70 0
200	275	1 0	1 5	18 0	1 8	14 6	85 3	60 0
300	275	4 0	1 5	3 0	0 6	80 7	19 3	22 3
300	275	1 0	1 5	10 0	1 7	29 0	71 0	55 0
300	275	1 0	1 5	18 0	0 7	16 4	85 3	82 0
350	275	2 2	1 5	3 0	2 1	80 7	19 3	19 8
350	160	1 0	3 0	10 0	0 5	7 6	92 4	16 0
350	275	1 0	1 5	10 0	1 7	21 8	78 2	57 0
400	300	75	3 0	emulsion	1 4	16 3	83 7	1 0
400	275	0 5	1 5	3 0	0 4	78 3	26 5	5 3
400	300	1 0	3 0	10 0	0 7	8 2	91 8	5 4
400	275	1 0	1 5	10 0	0 9	5 8	95 0	50 0
400	300	1 0+	3 0	7 3	0 8	11 8	88 2	23 0
200	50	0 75	24 0	3 0	0 3		67 5	30 0
300	175	1 25	1 5	10 0	0 8	16 1	83 8	
400	275	1 00	1 5	10 0	2 0	25 6	74 4	30 0
300	175	1 25	3 0	10 0	0 8	15 4	84 7	56 0

TABLE 3—EFFECT OF PRESSURE

Agitation time	Settling time	Pressure, lbs./sq. in.	B.S.&W. in settled oil	Salt concentration, lbs./1,000 bbls.	
				Topped crude	Desalted oil
1 hour	1 hour	160	2 0	116	20
1 hour	1 hour	275	2 0	116	25

while amounts of water higher than 10 per cent added to it will result in the formation of a much thicker emulsion layer which tends to retain brine or water globules on its surface. Thus, the per cent of salt in oil-free water withdrawn from the bottom increases with an increase in temperature, while the per cent of salt in the emulsion layer (based on total salt content) and the emulsion layer itself decreases with an increase in temperature. As a rule, there is a better and sharper separation of water from the emulsion layer at higher temperatures, especially when between 3 and 10 per cent of water is used, yet no separation is obtained at 200° F. with 10 per cent of water. In general, the separation is the poorest at 200° F., and the best at 400° F. On the other hand, the temperature alone cannot control the amount or water in the desalted oil, as well as the behavior of an emulsion layer under various conditions of temperature and per cent water added without considering such an important factor as agitation. It is quite evident that the emulsion layer results from separation of a more stable emulsion in one layer which cannot be broken under the conditions suitable for breaking a less stable emulsion. The data of these tests are shown in Table 2.

The pressure has no effect on breaking the emulsions and therefore the salt removal, providing it is kept higher than the vaporization pressure of water at the temperature. Comparing the two following runs in Table 3 the conditions under which the emulsions were treated were identical with the exception of pressure (275 pounds and 160 pounds per square inch respectively), it was found that the change in pressure affected neither demulsification nor the salt removal.

To summarize, the desalting is more effective at higher temperatures, about 400° F., with enough pressure to keep water in liquid form, about 300 pounds per square inch, and approximately 10 per cent of water properly emulsified in oil. At the above conditions smaller emulsion layers are obtained (3-4 per cent of the total charge) with a very sharp separation of oil-free water.

Seasonal Improvements

(Continued from Page 55)

anyone else, the area covered by the survey was divided into four so-called weather zones, the contours of which were determined by Figure 5.

By the use of Figures 5 and 6 the dates between which the various S.A.E. numbers should be used can then be put on a calendar basis in many different forms. To the car owner these date limits are definite and are at least more accurate than his own interpretation of temperature ranges. Our chart of recommendations graphically portrays viscosity requirements from north to south. Three definite factors are accounted for using the chart, as follows:

1. The zone in which the vehicle is operated.
2. The date.
3. The make and model of the car.

By means of matching the color or shading in the zone key with the same color or shading in the columns at the head of the chart, it is simple to find the correct S.A.E. number for any model without any interpretation whatsoeer.

The present authors are indebted to the authors of the original paper[2] for the method of presenting the gasoline survey data, to Wilmoth Clark and others for the vast amount of statistical work involved in bringing the presentation up to date, and to M. G. Blair for valuable assistance concerning calendar lubricating oil changes.

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Plans for Chemical Industries Exposition Make Progress

Display plans for the sixteenth exposition of chemical industries are being rapidly advanced by the more than 250 exhibitors who have engaged space to date. Three floors of Grand Central Palace will be occupied, and indications point to one of the most successful chemical expositions in the long history of these events. Raw materials and chemical products, laboratory and plant equipment, and the machinery essential to manufacturing in all of the industries based on chemistry and chemical engineering will be shown at the exposition. It will be held December 6 to 11, 1937.

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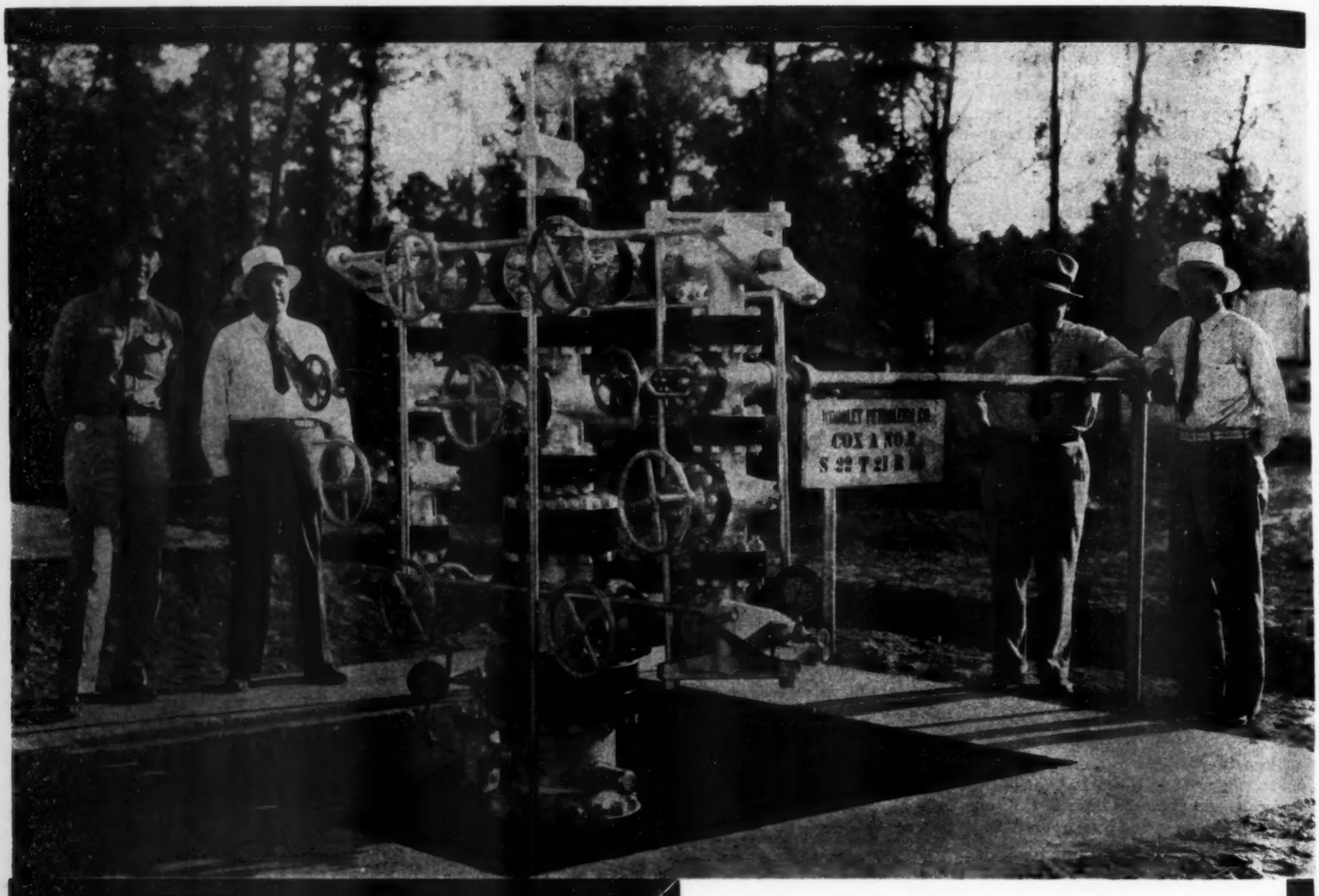

The Brewster Xmas Tree Well Assembly pictured here has just been installed on Woodley Petroleum Company's Cox No. 2 in the Cotton Valley Field. Reading from left to right the men in the picture are H. A. Harlan, shop superintendent at the main Brewster Plant. A. O. Price, General Manager of The Brewster Company. J. C. Tippett, president and owner of the Tippett Drilling Company that drilled the well. Howard W. Davenport, general superintendent of the Woodley Petroleum Company and designer of this high pressure assembly.

When this picture was made the well was flowing at 3,100 pounds tubing pressure from a depth of 8,500 feet, closed in pressure 4,000 pounds.

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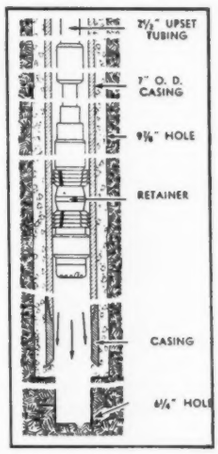
Plug-Back Work in the East Texas Field

By R. H. MAPLES and F. J. MIKESKA
Cities Service Oil Co. Gulf Oil Corp.



Typical squeeze job to cement off water coming from formation below the casing shoe

The recent rapid encroachment of Woodbine water in the west side of the East Texas field has impressed operators that it will be one of their most serious problems in lease operations and for this reason it has confronted them with the necessity of adopting methods of controlling this water production or providing adequate means of disposal.

It is generally recognized among operators that steps should be taken to keep water production down to a minimum, not only to prevent the cost of lifting and subsequent handling of the water, but also for the maintenance of reservoir pressure to insure longer flowing life for the field.

The Woodbine sand of the East Texas field has a high permeability and an average porosity of approximately 25 per cent. The field is under a water drive from the west and water is directly under the oil in a large portion of the field. However, due to shale breaks the level of the water may not be constant even from one location to the next. Woodbine water may easily be identified by its chloride content, and it is usually determined by this characteristic before an operator does plug back a well.

At the present time the principal methods used in shutting off bottom-hole water are by placing a cement slurry in the bottom of the well bore to form a plug or by forcing this cement slurry from the well bore into the sand section to form a false cap. These methods are generally known as "nonsqueeze" and "squeeze." To obtain reasonable success in plugging back wells to shut off bottom-hole water by these methods the actual conditions of the sand exposed should be known in order to determine the best method of plugging and procedure to follow. These bottom-hole conditions can usually be obtained from driller's well logs, or if not available there, can be obtained by electrical logging.

The well should be killed, cleaned out to bottom and the total depth checked with a steel line. The sand face should then be thoroughly cleaned by pumping water into the well through tubing spaced 1 foot off bottom. Sufficient amount of approximately 15-pound cement slurry required to plug back to the desired depth should then be placed in the well bore. The cement slurry may be placed either by dump bailer or by pumping it into the tubing spaced 1 foot off bottom and displacing with water. The amount of water necessary to make this displacement should be calculated and measured into the tubing. After the cement is placed the bottom of the tubing should be raised to desired top of cement plug and circulation reversed to wash out excess cement. The tubing should then be raised and cement allowed to set for 24 hours minimum.

***A.P.I.*—Presented before East Texas Chapter, Kilgore, Tex., October 5, 1937.**

Squeeze Method Procedure

In the squeeze method the well should be prepared in the same manner as described in the nonsqueeze manner. With the casing and tubing loaded with water, pressure is applied by pumping water into the tubing until the water is started into the formation. This is done to break down the resistance at the sand face to prepare it to take the cement slurry. The water is then followed with 12-pound cement slurry which may be increased to 15-pound if the 12-pound slurry is being squeezed into the sand section without requiring excessive pressure. Due to each well presenting a different problem, the amount of cement squeezed into the sand section must be determined during the actual performance of the "squeeze." In most cases 200 sacks of cement will be the maximum amount required. After the required amount of cement is squeezed into the sand, circulation is reversed to wash excess cement from the tubing. In some cases the cement slurry in the hole is allowed to set for 24 hours under pressure. During recent squeeze jobs, some operators have used cement retainers because in some cases high pressures must be used to perform the squeeze. When a cement retainer is used it is usually set near the bottom of the casing. The use of a cement retainer affords distinct advantages in that it eliminates possibilities of rupturing casing and allows the operator to pull tubing immediately after the squeeze job and pick up and run drill pipe into the hole while waiting for cement to set.

The pump pressure necessary to start water into the formation is commonly called the break-down pressure and varies in different parts of the field. North of the Sabine River the average break-down pressure is 850 pounds, in the Kilgore area the average is 750 pounds, while in the south portion of the field the average is 550 pounds. To date the highest break-down pressure required in the field has been 1,000 pounds.

In an effort to compare the merits of the two methods of plugging off water, data have been prepared showing the per cent of successful water shut-offs that operators have experienced in wells of varying sand penetration as shown in Table No. 1. Data as to water level in the wells was not available and some failures in wells with considerable sand penetration are probably due to the water being very near the top of the sand.

TABLE 1—SUCCESS OF DIFFERENT PLUGGING METHODS FOR VARYING SAND PENETRATION

Sand penetration, feet—	Squeeze method				Nonsqueeze method			
	No. of wells plugged	Successful plug backs		Per cent successful	No. of wells plugged	Successful plug backs		Per cent successful
		Yes	No.			Yes	No.	
1	1	..	1	0	0	..	..	...
2	3	..	3	0	0	..	..	...
3	3	3	..	100	0	..	..	...
4	5	2	3	40	1	..	1	0
5	1	1	..	100	1	1	..	100
6	4	2	2	50	0	..	..	...
7	4	4	..	100	1	1	..	100
8	3	3	..	100	2	2	..	100
9	3	2	1	67	2	1	1	50
10	4	3	1	75	0	..	..	...
11	1	1	..	100	1	..	..	100
12	7	4	3	57	5	2	3	40
13	1	1	..	100	2	2	..	100
14	2	1	1	50	4	4	..	100
15	3	2	1	66	2	1	1	50
16	0	..	..	...	0	..	..	...
17	1	1	..	100	0	..	..	...
18	1	1	..	100	0	..	..	...
19	1	1	..	100	2	2	..	100
20	0	..	..	...	0	..	..	...
21	2	2	..	100	1	..	1	0
22	0	..	..	...	0	..	..	...
23	2	2	..	100	1	1	..	100
24	0	..	..	...	2	2	..	100
25	1	1	..	100	1	1	..	100
26	0	..	..	...	0	..	..	...
27	0	..	..	...	1	..	1	0
28	1	1	..	100	0	..	..	...
29	0	..	..	...	1	1	..	100
30	1	1	..	100	3	3	..	100
Total	55	39	16	70.8	33	25	8	75.7

Summary

In preparing Table No. 1 all of the available plug-back data in the East Texas field was assembled and classified under the two different methods of placing the cement and grouped according to sand penetration prior to plugging back. These data included the plug-back work of all operators in the field that had this type of information available. Therefore, it should be representative information for the field, and not simply the method of operation of a few companies. In classifying these plug-back jobs as to successful and unsuccessful, in all cases where the water percentage was reduced 50 per cent or more, the plug back was considered to be successful, and unsuccessful where the water was not reduced as much as 50 per cent.

In summarizing Table No. 1 there are 55 squeeze jobs of which 39 or 70.8 per cent were considered to be successful, while by the nonsqueeze method 33 plug backs were attempted with 25 or 75.7 per

cent considered to be successful. From this analysis it is evident that the nonsqueeze method has shown a greater per cent of successful water shut-offs. However, while these data were being assembled and classified it was noted that the water shut-offs of wells of 10-foot penetration or less was more complete in cases where the squeeze method was used. From further analysis of this table it is seen that 31 squeeze jobs were attempted on wells having from 1- to 10-foot sand penetration, while only seven nonsqueeze jobs were attempted in wells having 10-foot or less sand penetration and none in wells of less than 4-foot penetration which indicates that operators prefer the squeeze method in wells of small sand penetration.

Using information available from six of the major operators in the East Texas field on plug-back operations during the past 12 months, Table No. 2 was prepared to show the general preference of this group as to the method of placing cement in the well for plug backs. From this table it can be seen that during the six months from September 1, 1936, to March 1, 1937, five squeeze jobs and four nonsqueeze jobs were performed, and during the next six months from March 1, 1937, to September 1, 1937, 24 squeeze jobs and 7 nonsqueeze jobs were performed. This being a 380 per cent increase in the squeeze method of plugging back and a 75 per cent increase in the nonsqueeze method.

TABLE 2—COMPARISON OF METHODS OF PLACING CEMENT PLUGS

	Mar. 1, 1937 to Sept. 1, 1937	Sept. 1, 1936 to Mar. 1, 1937	Per cent increase
Squeeze jobs	24	5	380
Nonsqueeze jobs	7	4	75
Total plug-back jobs	31	9	244
Squeeze jobs	77%	55%	
Nonsqueeze jobs	23%	45%	

Due to the success of shutting off bottom-hole water by plug-back work in the East Texas field every operator should take advantage of these methods and attempt to keep water production down to a minimum. By doing so the operator would benefit by reduced lease operating expense due to the reduction of cost of lifting and subsequent disposal of bottom-hole water and by the maintenance of reservoir pressure which would insure longer flowing life for the field.

Portable Laboratory Is Used in Pipe Line Corrosion Study

By L. E. BREDBERG

In an effort to improve on and speed up soil analysis as related to pipe line corrosion, a portable laboratory with special equipment is operated by the Magnolia Pipe Line Co. A brief description of the equipment and methods used in the soil testing of both field and laboratory work is outlined.

The portable laboratory is arranged in three sections or compartments. The front section is for office work; the center section is for heating and grinding, while the rear section is the laboratory. The unit is wired for 110-volt light and power. 6-volt D.C. testing and emergency lights. A fan furnishes filtered air throughout the trailer. The entire structure is insulated against heat and cold. The office section contains a steel desk, typewriter, filing cabinet, overhead storage cabinets for supplies, closet for storage of field equipment, septic tank type toilet, power and light entrance switch and a 30-gallon fuel tank for heating.

The heating and grinding section: One side contains a motor-driven soil grinder, an automatic air compressor furnishes air to drive the shifting arrangement on the nipple grinder and also to clean equipment. On the opposite side is the heater and drying oven. This is used to dry out soils, make hot water, and warm the trailer in winter. A fan draws in fresh filtered air and distributes the air into the front and rear compartments and then out through the grinding section to the exterior. In the winter the air may be circulated around the heater before being distributed through the trailer. By this arrangement dust and dirt from grinding is eliminated from the office and laboratory sections. The fan arrangement also helps to keep the trailer more comfortable during the various seasons.

The laboratory section contains two desks, one on either side. Each is equipped with hot and cold water, distilled water and a sink. One desk is especially equipped for pH determinations and is arranged so that all waste water is dumped from the sample cup into the sink. Distilled water is piped to this location and is equipped with a hose and nozzle for rinsing and cleaning the electrode, etc. Saturated resistance tests, weight determinations, and running of corefield nipple tests are also conducted in this space. Underneath this desk is the corefield nipple rack, 6-volt storage batteries, battery switching and charging panel and storage space. The desk on the opposite side accommodates two shaker racks each containing twelve 100-cc. volumetric flasks for pH determinations. Also a funnel stand for filtering one-half of the rack or six flasks at one time. Underneath the desk is a motor-generator battery charger and additional storage space.

In the field it is very important that all tests and sampling be at pipe depth. The field men set stakes, record and number stakes, list vegetation, drainage, creeks, rivers, highways and railroads. Auger test holes, from 6 to 10 inches apart, are drilled to at least pipe depth. Shepard cane resistance readings (top to bottom) are taken. Also they take samples according to resistance readings, soil classification and pH values.

The work consists of drying soil, running saturated resistance tests, pH determinations, filtering, grinding of nipples, stenciling and weighing nipples, preparing corefield tests, buffing nipples after these tests, reweighing nipples, charging batteries, and preparing laboratory reports on all work. All field and laboratory work is arranged in chronological order and results tabulated according to chaining.

The crew normally consists of five men, but as many as 10 men are sometimes used in taking samples and making the laboratory tests, the crew riding in the truck towing the laboratory. The average line coverage is about 2½ miles per day, the company making surveys only of "hot spots" along the line to determine the soil's corrosive action on the line pipe.

Transporting Equipment

All field and laboratory equipment and instruments are carried in the towing truck and laboratory, which are ready to move out to working location within 30 minutes after orders are received by E. A. Koenig, corrosion engineer, who is in charge of the corrosion survey work for Magnolia. Such a laboratory, consequently, saves much time and expedites such survey work for the company. All equipment in the truck, including office desk, chairs and laboratory equipment and instruments, is bolted into the laboratory trailer so that any piece of equipment can easily and readily be removed and replaced when necessary.

This soil corrosion survey work is done to determine means of reducing pipe line corrosion by analysis of soil, and was described in an article appearing on page 63 of the June 17, 1937, issue of The Oil and Gas Journal.

"The Cracking Art in 1936"

"The Cracking Art in 1936," by Gustav Egloff, Emma E. Crandal and Martha M. Doty, has been published by Universal Oil Products Co., Chicago, Ill., in which data on cracking published from January 1 to December 31, 1936, are reviewed. The volume, published annually, also contains patents granted in the United States and foreign countries on various cracking processes.

The book consists of the following chapters: World status of cracking; economies of cracking; the cracking reaction; liquid vapor phase cracking, vapor phase cracking, selective or multiple-coil cracking; cracking equipment; cracking with oxidation; electrical cracking; cracking other than petroleum oils; cracking and polymerization of hydrocarbon gases; alkylation; treating cracked products; by-products of cracking; analytical; and reviews of cracking.

Magnolia Pipe Line Co.'s new portable corrosion laboratory and crew car. Standing by the truck are R. L. Sinclair, crewman, and E. A. Koenig who designed the laboratory and is in charge of the company's corrosion work

Reasoning Behind Diesel Fuel Specifications

By T. B. RENDEL
Director Engine Research, Shell Petroleum Corp.

"Necessity is the mother of invention" and the maternal parent of the diesel engine was the need for a prime mover which could efficiently utilize the wide range of oils lying between naphtha and gasoline and the heavier residual oils such as road oil and asphalt. Of late, due to various economic and political reasons, not the least of which are the high taxes placed on gasoline, considerable impetus has been given to the development of engines of this class; indeed so rapid has been this development that the diesel engine is now able to compete with what is perhaps the most highly developed form of prime mover in existence, the high speed gasoline engine used for road transport.

Now, new conditions call for new development, and, as might be expected, the trend of developments of the diesel engine has been toward the use of higher speeds and higher power output per cubic inch of engine displacement and this trend I believe can be expected to continue. Following the natural tendency to give most attention to the exceptional cases, the opinion is easily formed that most high speed diesel engines operate in the range from about 2,000 to 3,000 r.p.m. However, such does not appear to be the case; in fact there does not even appear to be much tendency toward increasing speeds (Figure 1). The maximum development has remained at about 1,700 r.p.m., according to data from the annual statistical issues of Automotive Industries, although the range has broadened out from 1,000 to 3,000 r.p.m. in the past five years. The biggest change from year to year has been the expansion in the number of models at nearly all speeds, and it appears that the fuel refiner should strive to provide satisfactory fuels especially for engines of about 1,700 r.p.m.

However, to be successful in the future the diesel engine must not forget its maternal parent and its digestion system must, as far as possible, be such that it will burn cleanly and completely without objectionable exhaust smell, the majority of fuels lying within the range of gasoline and reasonably heavy residual oil. This problem becomes more and more important as development advances and the use of the diesel engine expands, since the higher speed engines are unavoidably more sensitive to abuse when made to digest unsuitable fuel and the necessity for widespread distribution of diesel fuel tends to raise its price nearer and nearer that of gasoline. It will be of interest therefore to discuss briefly the necessity for and the reasoning behind the types of diesel fuel specifications as we know them today in an endeavor to assist you, as fuel suppliers or refiners, in cooperating with engine manufacturers and operators in our joint effort to set fuel specifications which will give proper engine performance without unduly penalizing our manufacturing and distributing facilities and thus increasing the cost of the fuel.

General Fuel Classification

However, the need for some general specifications, particularly for high speed engines, is I believe generally admitted and in particular some considerable simplification is desirable in view of the multiplicity of specifications issued by the various engine manufacturers. Table 1 shows the A.S.T.M. tentative specifications for diesel fuels compared with the recently adopted W.P.R.A. specification and the specifications of three prominent manufacturers of high speed engines. Due to the fact that we are primarily dealing with the high speed diesel fuels I am proposing in the following discussion to neglect such fuels as are covered by the A.S.T.M. specifications 5D and deal primarily with the reasoning behind A.S.T.M. specifications 1D and 3D and W.P.R.A. specifications.

***W.P.R.A.*—Presented before Regional Meeting at Tulsa, Okla., October 5, 1937**

Now broadly speaking in any fuel specification we have two basic problems to consider. One is the problem of handling the fuel and dispatching that fuel from the refiner's supply tanks to the final fuel valve which admits the fuel at the proper time and in the proper form of spray to the combustion chamber. The second problem is to supply a fuel at this valve which will burn completely in the combustion chamber without objectionable exhaust smell or leaving objectionable deposits which will eventually result in destroying the "tune" or the mechanical adjustments of the engine thus destroying its mechanical efficiency. Under the first of these problems we have to consider such properties of the fuel as its viscosity, pourpoint, and last, but by no means least, its cleanliness. Under the second problem we have to consider its ignition quality, sulfur content, viscosity, and volatility (which is frequently measured in the case of diesel fuels by combination of its viscosity and Conradson carbon).

The factors involved in the solution of the first problem are relatively simple and can be dealt with briefly.

Clearly if we are to have any real control of the injection timing, or the quantity of fuel injected, and of the shape of the spray formation, the viscosity of the fuel must be controlled within reasonable limits. Many of the distillate fuels now available for diesel engines have rather a low viscosity which may eventually cause trouble. When a fuel of too low viscosity is used there is an opportunity for considerable leakage past the fuel pump plunger and injection valve which may upset the injection timing and the amount of fuel injected at various stages in the combination process. As the fuel pump plunger and injection valve wear, this leakage in fuel will tend to increase, with the result that a point is reached in the life of an engine where small maintenance adjustments on the fuel injection equipment become troublesome and if such adjustments are not made, or the necessity for such should not be noticed, the trouble will occur in the combustion of the fuel and a smoky exhaust and eventual gumming up of the piston rings will result.

On the other hand, the use of too viscous a fuel is apt to cause trouble on account of increased viscosity at low temperature. In some cases this temperature may even be below the pourpoint of the fuel so that the fuel will not flow through the suction side of the fuel pump. In power plant installations it is usually possible to provide some simple means for heating the fuel in the tank but such a simple solution is not practicable in the case of automotive or mobile equipment and in these cases the pourpoint specification is of major importance.

Again fuel viscosity may determine the spray characteristics given by any particular design of nozzle, and, depending on the design of combustion chamber and type of air swirl, the spray characteristics are of some importance, since combustion chambers are usually designed to operate under a given type of spray

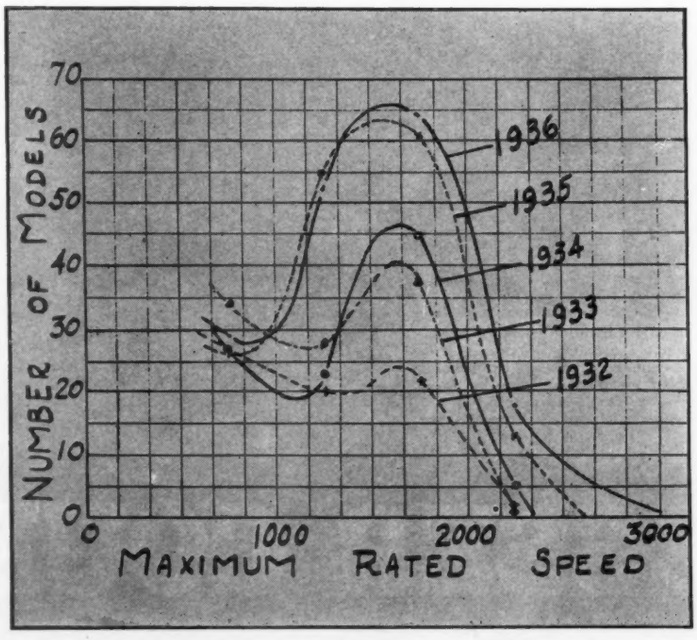
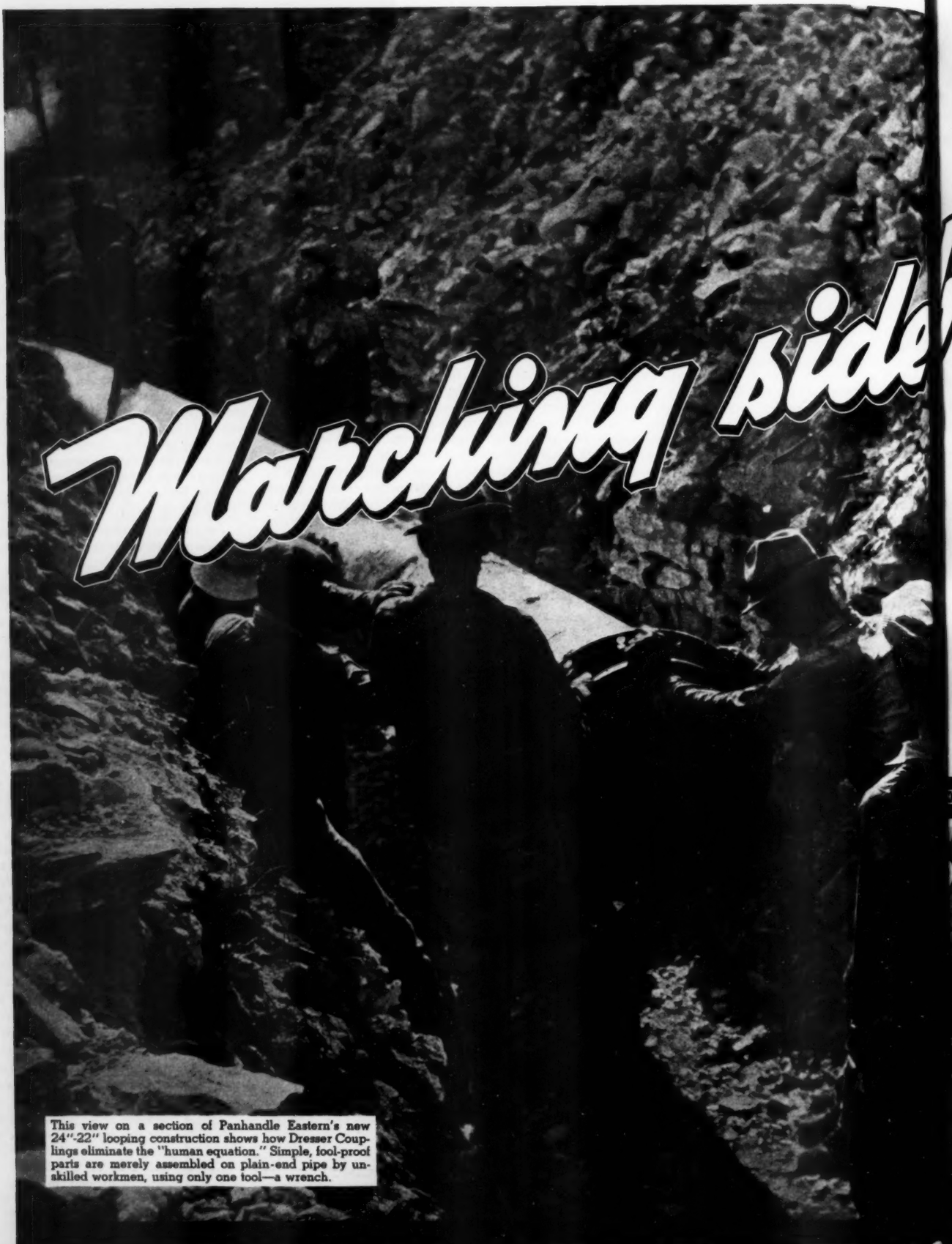


Fig. 1—Development of high-speed diesel engines


Marching side
This view on a section of Panhandle Eastern's new 24"-22" looping construction shows how Dresser Couplings eliminate the "human equation." Simple, fool-proof parts are merely assembled on plain-end pipe by unskilled workmen, using only one tool—a wrench.
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...00 Dresser joints were used on this important 22", 230-mile extension from Zionsville, Indiana, to Detroit.

Completely Dresser-coupled is this recently constructed 36" gas main in one of Illinois' largest cities.

From Hugoton to Mullinville, Kansas, runs this 20" gas line, on which more than 7,000 Dresser joints were used.

...40-mile gas line in London, Ontario ...and 10" in size) augments a previ... built line, also completely ...sser-coupled.

On this 6", 100-mile gas line in central Nebraska, approximately 11,000 Dresser Couplings were used throughout.

To connect gas wells to a transmission line is the purpose of this 6" all-Dresser-coupled line near Huntington, W. Va.

Dresser flexible Couplings were used at every joint on this 103-mile, 12" gas line over the mountains of western Pennsylvania.

formation. Broadly speaking, fuels of low viscosity give fine atomization with broad dispersion of the spray but shortened penetration; higher viscosity fuels offer greater resistance to atomization causing the larger fuel particles to have greater penetration with corresponding loss of dispersion.

Fortunately, in the case of straight distillate fuels with a viscosity below 50 seconds Saybolt Universal at 100°F., the differences are small enough to be ignored in most well designed combustion chambers. However, in the case of the higher viscosity fuels, particularly those containing fairly large amounts of residual fuel, the beginning of injection is sometimes delayed and the determination of the end of injection is not always positive. This causes dribbling which prolongs the introduction of the fuel far down the combustion stroke and usually results in coking or carbonizing the nozzle orifice and consequent serious disruption of the spray formation which further upsets the combustion and increases the tendency to carbonization.

However, perhaps the most important factor involved in the first half of our problem is the necessity for providing only clean fuel in the fuel injection system of the engine. Undoubtedly one of the most prolific sources of trouble in diesel engines is the use of dirty fuels and by this is meant the introduction of solid matter after shipment from the refinery. By far the greatest cause of this contamination is careless handling in the field and this applies particularly to mobile equipment since it is in these particular engines that cleanliness is of the most vital importance, and yet, it is the one situation in which it is the most likely to be disregarded. Since diesel fuel is heavier and more viscous than gasoline it will hold dirt in suspension for longer periods of time and therefore greater care must be taken with diesel fuels than with gasoline, and only clean funnels and hoses should be used. Tanks should be of adequate capacity and provided with large sediment traps.

Clearly no amount of ingenuity in drawing up rigid specifications will guard against this form of contamination and there still remains a very profitable field for a joint educational program on behalf of the fuel supplier and engine manufacturer to instruct their joint customer, the engine operator, as to the necessity for eliminating all form of abrasive grit from what is easily the most expensive part of a diesel engine, fuel pump and fuel injection valves. Some specification will however probably be demanded by an engine manufacturer to guard him against the careless fuel distributor and thus specifications for B.S.&W. and ash are probably justifiable provided they are not too rigid.

Coming now to the second phase of our problem, that is the problem of considering combustion quality of a fuel, the most important specifications are ignition quality, volatility and Conradson carbon. Now the recent development of the high speed diesel engine has been made possible largely as a result of the simplification of the theory of the combustion process propounded by H. R. Ricardo and later borne out in some remarkable motion pictures made in an actual engine by A. M. Rothrock of the National Advisory Committee for Aeronautics. As a result of such work combustion has been shown to take place in three stages, first, a delay period during which no appreciable combustion takes place but during which the fuel is heated up to its ignition point; second, the rapid burning of the fuel which has been injected during the delay period; and, third, the instantaneous ignition of the remainder of the fuel as it is discharged into the flaming gases from the fuel injection valve.

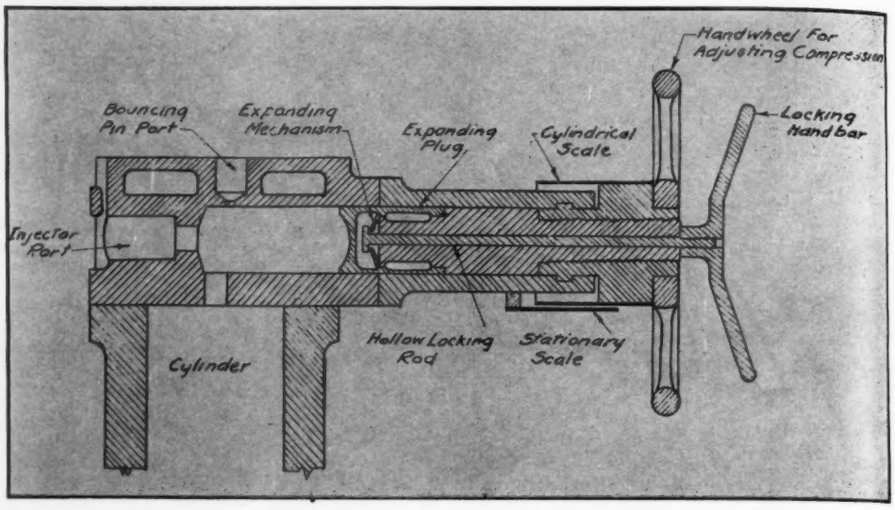

Fig. 2—Section through cylinder head showing mechanism for varying volume of combustion chamber

Now for any given timing of injection of the fuel the rate of rise of pressure during the second stage of combustion depends primarily on the duration of the delay period, that is the time involved in the first stage of combustion. The longer the delay period the higher will be the rate of rise of pressure since a greater amount of fuel will have been injected into the cylinder before combustion starts and the rate of burning comes under the direct control of the fuel injection equipment. Control of the duration of this delay period, therefore, is essential if we are to have proper control of the fuel combustion.

The duration of this delay period is controlled to a very large extent by engine design and can be reduced by providing suitably located hot spots in the combustion chamber to serve as ignition points and by properly controlled turbulence. However, the ignition quality of the fuel plays some considerable part in the duration of this delay period and it is for this reason that engineers and fuel technologists are cooperating in the study of the relative significance of fuel ignition quality and engine design and it is also for this reason that fuel refiners are now bothered with a new item in fuel specifications known as cetane number.

The necessity for specifying the ignition qualities of a fuel and the suggestion as to the method of so doing was first put forward by Messrs. Boerlage and Broeze in 1932. Subsequent to this a small group known as the Volunteer Group for Compression Ignition Fuel Research was formed in this country to study this question and later to standardize on a method of measuring the ignition quality of diesel fuels. The group has been actively pursuing its work for the past three years and has presented yearly reports on its work to the Society of Automotive Engineers (S.A.E. Journal, June, 1935, and 1936, and September, 1937).

In 1935 it recommended that the most suitable method for expressing the ignition quality of a diesel fuel was in terms of its cetane number and that the best method of determining the cetane number of a diesel fuel was by measuring the relative delay period of the fuel under test in an equivalent mixture of cetane and alpha methylnaphthalene in a high turbulent diesel conversion of the C.F.R. engine.

Figure 2 shows a cross section view of the cylinder and cylinder head of the high turbulent conversion of the C.F.R. engine. Delay period is measured electrically by recording the time of injection and the time of ignition. No definite instrumentation has yet been selected though the bouncing pin type shown in the drawing has now been discarded in favor of an electromagnetic type of pickup.

During 1936 the group has done considerable on the improvement of the method of recording the delay and technique of operation, and it can now be said that the average consistency of determination of cetane numbers is of the order of ±2 numbers. Figure 3 shows deviations of results of a number of laboratories from the average on the latest series of cooperative check tests among members of the group.

In regard to the cetane number requirements of diesel engines it should be clearly understood from the start that it is not the object of the fuel supplier or the engine designer to eliminate the delay period but to control it. Thus it is in practice often undesirable to raise the cetane number of a fuel above certain limits. This is a definite requirement resulting from the fact that for satisfactory operation some action must take place between the time of injection and ignition. Thus, in a certain design, the fuel may be injected across the combustion chamber into an air cell at the mouth of which ignition takes place. In such an engine a quick burning fuel will ignite before it reaches the mouth of the air cell and under such circumstances the mixing of air and fuel will be much less complete than if the fuel had reached the air cell before igniting. Exhaust smoke and loss in power may therefore result from the use of a fuel having exceptionally high ignition quality in engines designed for slow igniting fuel.

TABLE 1—COMPARISON OF DIESEL FUEL SPECIFICATIONS

	Authority and year							
	W.P.R.A.	A.S.T.M. Revised in Committee D-2 1937 Report				Manufacturers		
	1937					1936		
Grade	No. 1	D-1	D-3	D-4	D-5			
S.U. viscosity at 100° F., sec. min.	35	35	35	..	..	35	35	35
S.U. viscosity at 100° F., sec. max.	50	50	70	250	..	80	70	..
Furol viscosity at 122° F., sec. max.	..	..	..	..	100	..	..	..
Conradson carbon, per cent by weight, max.	0.2	0.2	0.5	3.0	6.0	..	3.0	0.25
Pourpoint, deg. F., max.	†35	‡35	‡35	35	..	0	..	..
Flashpoint, deg. F., min.	150	115 or legal	150	150	150	..	140	150
Sulfur, per cent by weight, max.	1.0	1.5	1.5	2.0	2.0	0.7	1.0	2.0
B.S.&W., per cent by weight, max.	0.05	0.05	0.1	0.6	1.0	0.5	0.5	0.05
Ash, per cent by weight, max.	0.01	0.02	0.02	0.04	0.08		0.05	0.01
Cetane number, min.*	45	45	35	30	..	45	45	45

*Delay method. †Except where climatic conditions require lower pourpoint. ‡Minimum viscosity must be waived if pourpoint is less than 10° F.

Again, even engines which require a very short delay period to give smooth running can show loss in power output and an increased fuel consumption if this delay period is cut down too short. This could best be visualized by considering a possible case where the delay period is infinitely short, i.e., fuel ignites the moment the first droplet of fuel starts from the nozzle. In this case it is

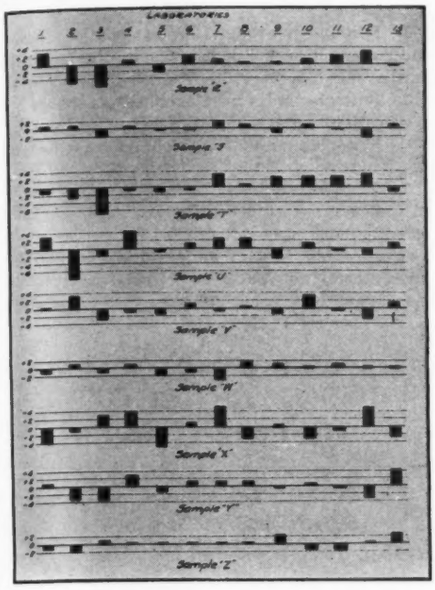

Fig. 3—Deviations from average results obtained using the delay method

obvious the fuel distribution in the combustion chamber will be exceedingly poor, and combustion incomplete, resulting in a loss of power and a smoky exhaust. Nozzle temperatures would also be extremely high resulting in an increased tendency to stick.

Now important as cetane number is, it is not the whole criterion of the quality of a diesel fuel in regard to its combustion qualities. As the fuel is injected in the liquid phase, before combustion can start there must be some evaporation of the droplets and rapid subsequent heating of the vapors to the air temperature by direct contact with the hot compressed air. Subsequent to this the development of heat from the reaction of the vapors causes locally increased temperatures beginning at one or more points where the vapor concentration and other conditions are most favorable, until flame temperature is obtained which spreads rapidly and ignition can be considered to have been started. Thus for purposes of discussion we can divide the delay period up into two further periods the first of which might be called the physical delay and the second the chemical delay. Actually, of course, the two overlap and for the normal light type of diesel fuels its chemical composition is by far the most important. However, when we start to consider heavy fuels, then the physical or "volatility" delay does begin to play some part and probably accounts in part for the relatively low cetane numbers of such fuels.

The volatility of a fuel also plays some part in the third stage of combustion. As previously stated, the aim of all good diesel engine designs in the third stage of combustion is to burn the fuel essentially as it emerges from the fuel injection jets, and apart from the small amount injected during the delay period this condition is substantially true for all regular cases of gas oil and the lighter residual fuels. However, if a fuel has an appreciable content of heavy residue there results a considerable amount of late burning during the expansion stroke, a phase of combustion often known to many technologists as after-burning.

This after-burning is definitely undesirable since it lowers the performance of the engine appreciably and the fuel quantity per cycle is increased, after-burning increases and eventually results in incomplete combustion at the end of the expansion stroke although there is some air still present. Dirty exhaust with a sharp acrid odor results and it eventually gives rise to sticking the piston rings and other maintenance troubles.

Again this after-burning when suddenly chilled against cold cylinder walls stops the combustion reaction at an intermediate stage leaving products such as aldehydes and organic acids which cause acrid exhaust odors. Acids may also be formed which attack the cylinder liner walls and as the piston scrapes the corrosion products away after each stroke, presenting a fresh surface for a fresh attack, a condition arises which makes high cylinder wear inevitable. As previously remarked these half burnt products have a very acrid odor and their presence in the exhaust gas is very noticeable in a large number of high speed diesel engines. This once lead Mr. Boerlage of the engine testing station of the B.P.M. to remark to the writer that cylinder liner wear can be smelt, an opinion to which the author can heartily subscribe after sampling the exhaust odor of some of the worst offenders in this direction.

Another curse of incomplete combustion is the carbon usually found on nozzles. It is a product of evaporation, decomposition, and oxidation of liquid fuel and ranges from a thick oily substance to thick, sticky asphalt and often hard, glittering carbon. It is particularly objectionable because it interferes with the formation of the spray and con-

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EFFICIENT **PORTABLE** **ILLUMINATED**

This portable unit protects the gauges from the heat of the boilers, the vibration and pulsation of the pumps and corrosion by the elements. The water leg in the piping provides a positive seal against live steam reaching the gauges. The panel is illuminated for night operation. Syphons and test gauge connections are installed on the board. Flexible connections at the back allow for quick installation. 2" iron pipe can be used for standards and stirrups for this purpose are provided.

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MARSHALLTOWN MANUFACTURING COMPANY
MARSHALLTOWN, IOWA

sequently starts a vicious circle of poor combustion and fresh deposits which rapidly result in serious power and fuel consumption losses.

It is best combated by cooling the surface of the nozzle below temperatures at which carbonization takes place and this requires intensive cooling of the nozzle piece itself. The same procedure for avoiding carbonization in the combustion chamber of course cannot be applied, since it would involve drastic chilling of the reaction and consequent formation of soot and dirty exhaust.

One difficulty in discussing the effects of fuel volatility on combustion is due to the lack of a suitable volatility scale and it is unfortunate that this lack of a suitable test forces one to base the volatility of light fuels on the A.S.T.M. distillation and that of heavy fuels on the Conradson carbon test since neither test is of use in the other case and some common basis is very desirable. Modified carbon tests and evaporation tests devised by certain engine makers point to the fact that the need for such test is being felt. The A.S.T.M. distillation can only be used up to about 600° F. when cracking begins with many fuels and with such fuels a distillation test would have to be made under vacuum or with the aid of steam in order to avoid decomposition. On the other hand, it is doubtful whether such fuels actually evaporate in the engine without decomposition and their "volatility" may therefore in practice be a combination of their physical and chemical properties. The only tests which at the moment give an indication of this kind of "volatility" are carbonizing tests which however show only the amount of residue left. The best known is probably the Conradson carbon test which does allow some decomposition to take place during evaporation and allows the products evaporated below the cracking temperature to escape.

Summary

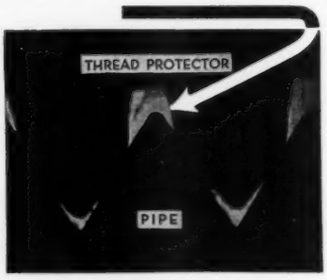
Summing up the whole question of fuel specifications we have the following requirements:

1. Suitable viscosity limits to ensure proper handling of the fuel on its passage to the combustion chamber.
2. Suitable pourpoint limits again to ensure that the engine's pumps can handle the fuel efficiently.
3. Suitable limits for cleanliness as shown by specifications for B.S.&W. and ash content.
4. Suitable limits for ignition quality to ensure adequate control of the first stage of combustion.
5. Suitable limits for volatility as expressed by the Conradson carbon number or other suitable volatility index to be developed.

Consideration of shipping regulations often requires flashpoints or gravity specifications but these do not directly affect engine performance.

THIS IS THE REASON WHY

You cannot damage threads when using—



Unretouched Photo of Wedge Thread thru Carl Zeiss Toolmakers' Microscope

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Lock on pipe

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IMPORTANT BOOKS for the Oil Man

"PRACTICAL PETROLEUM ENGINEERS' HANDBOOK"

Petroleum engineers and others interested in the production end of the oil business have frequently expressed a desire for a handbook containing petroleum engineering data. This desire is now filled through the publication of "Practical Petroleum Engineers' Handbook," edited by Joseph Zaba, petroleum engineer, Rio Bravo Oil Co., and W. T. Doherty, division superintendent, Humble Oil & Refining Co.

This book, just off the press, contains 400 pages of general engineering data pertaining to many features of drilling and production. Chapter 1 contains general engineering data; Chapter 2, Steam; Chapter 3, Power Transmission; Chapter 4, Tubular Goods; Chapter 5, Drilling; Chapter 6, Producing, and Chapter 7, Transportation. In each chapter are numerous tables, graps and other data pertaining to the subject under consideration. For instance, under "Drilling" derrick foundations are covered in a very complete manner with tables of safe bearing power of soil, concrete foundation data for steel derricks of various heights and general data on a 122-foot A.P.I. specification derrick.

The co-authors found by accident that they had both been accumulating practical data on field problems, and decided to join forces and compile these data into book form. Both authors are men with broad experience in the oil fields, and the work of arranging the data has been carefully done so that for the first time the petroleum engineer has available a handbook for his particular work similar in purpose to the many handbooks long available to engineers in other branches of industry.

"Practical Petroleum Engineers' Handbook" may be purchased through the Book Department of The Oil and Gas Journal at the regular established price of $5, express prepaid (postage extra outside the United States). A copy will be forwarded promptly upon receipt of check or money order for that sum. When no payment accompanies the order the book will be sent express c.o.d. to avoid delay.

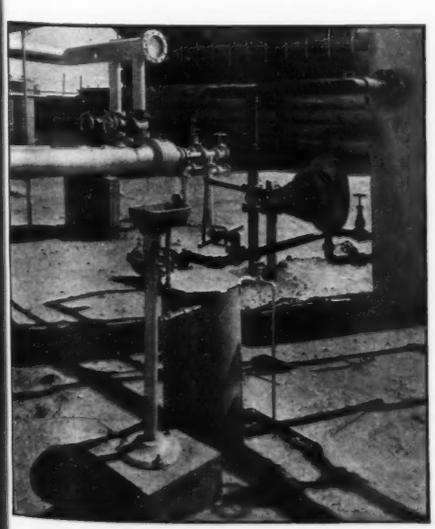
OPERATING IDEAS

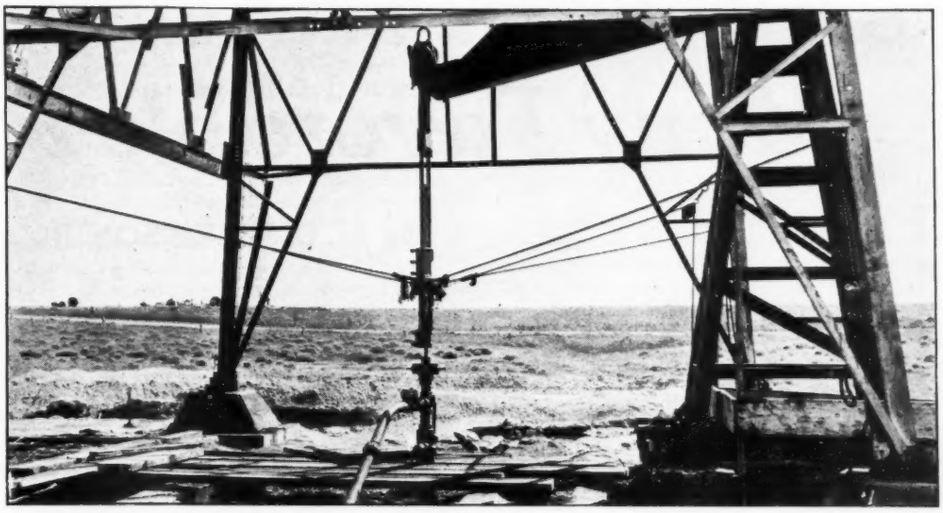
Butane-Cooled Fountain

A large oil company operating a natural gasoline plant in the Crescent field of Oklahoma has a modern drinking fountain installed in the yard of its plant. The cooling is effected by expanding butane into a coil placed inside of a piece of 10-inch casing, as is shown in the accompanying photograph. The coil is made from a piece of five-eighths inch tubing reclaimed from a heat exchanger column.

Wind Shield for Welder

A pipe line contractor laying a 24-inch gas gathering line in the Orlando field of Oklahoma found on extremely windy days that it was necessary to shield the welding rod from the wind; otherwise pin holes were created in the weld. To remedy this fault a piece of boiler steel, 8 inches wide, was cut to encircle the pipe and act as a wind shield. The shield has been found to be very satisfactory and required but little time to be placed on the wind-ward side of the joints to be welded. Its cost of construction is almost negligible.

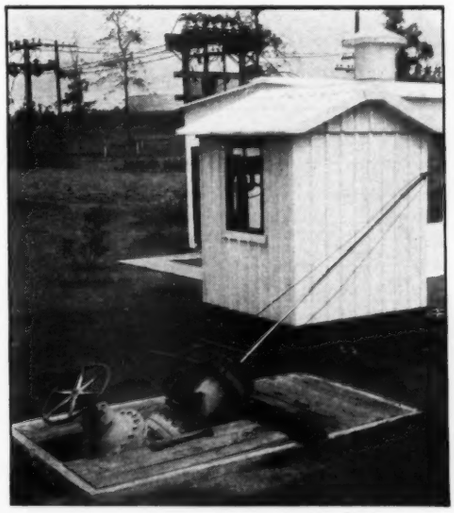




Reducing Vibration While Taking Well Potentials

Most operators when taking potentials in Kansas fields operate their units at rates of 24 to 30 strokes per minute. This throws considerable strain on the polish rod and tubing head, and causes the rod to vibrate, oftentimes as much as 2 or 3 inches on a straight-pull hanger. By guying the rod hanger with manila rope to each corner of the derrick, a greater part of this vibration is eliminated and the stroke cushioned thus prolonging life of the equipment.

Pipe Line Paraffin Scraper



A pipe line company operating in Louisiana has installed the pipe line scraper gate shown in the accompanying photograph at one of its stations. By means of the hand-operated winch the scraper is pushed down past the gate and into the main gathering line leading to the station. Removal of paraffin from their lines is one of the greatest problems encountered by East Texas pipe line operators.

Novel Power Take-Off

A producing company pumping several wells in the Fish pool near Wewoka, Okla., has an unusual power take-off on one of its geared pumping units. Driving from the backside crank is an arm made from hickory wood which is short enough to give a rocker effect to the shaft to which it is attached. A half-circle of a sprocket wheel is bolted to the end of the shaft, and attached to the sprocket is a piece of roller chain. The rocking motion imparted by the arm to the sprocket pulls the rod used to pump the second well, which is equipped with an ordinary pumping jack.

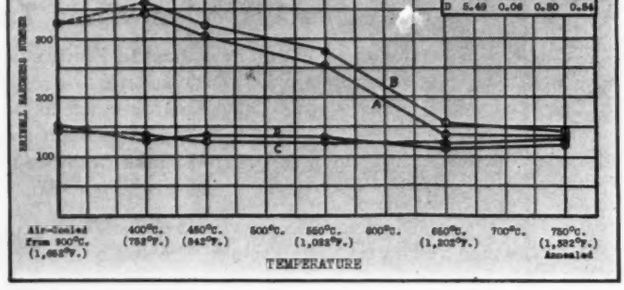
Columbium-Bearing Steel Has Many Favorable Properties

By W. D. WILKINSON, JR.
Electro Metallurgical Co.

The petroleum industry uses large quantities of wrought 4 to 6 per cent chromium steels because they surpass ordinary steels in creep strength and in resistance to oxidation and corrosion, and also because they are less expensive than the austenitic stainless steels which contain larger percentages of alloy element. Shortly after their introduction to the oil industry, the creep strengths of the 4 to 6 per cent chromium steels were increased by alloying them with molybdenum or tungsten. This was an important improvement, and a large percentage of the 4 to 6 per cent chromium steels used in refineries is now alloyed in this manner.

However, there was still need for further improvement if they were to give complete general satisfaction. Their tendency to air-harden was apt to cause difficulties in welding, and heating them above the critical range during use, or during installation by welding, tended to result in excessive hardness and brittleness on subsequent air-cooling.

Decreases in toughness were especially noticeable in steels tested at room temperature after use in refining apparatus operating continuously at high temperatures. The toughness of the 4 to 6 per cent chromium steels, regardless of whether or not they are alloyed with tungsten or molybdenum, decreases even more after these steels are cooled to temperatures below 32° F.



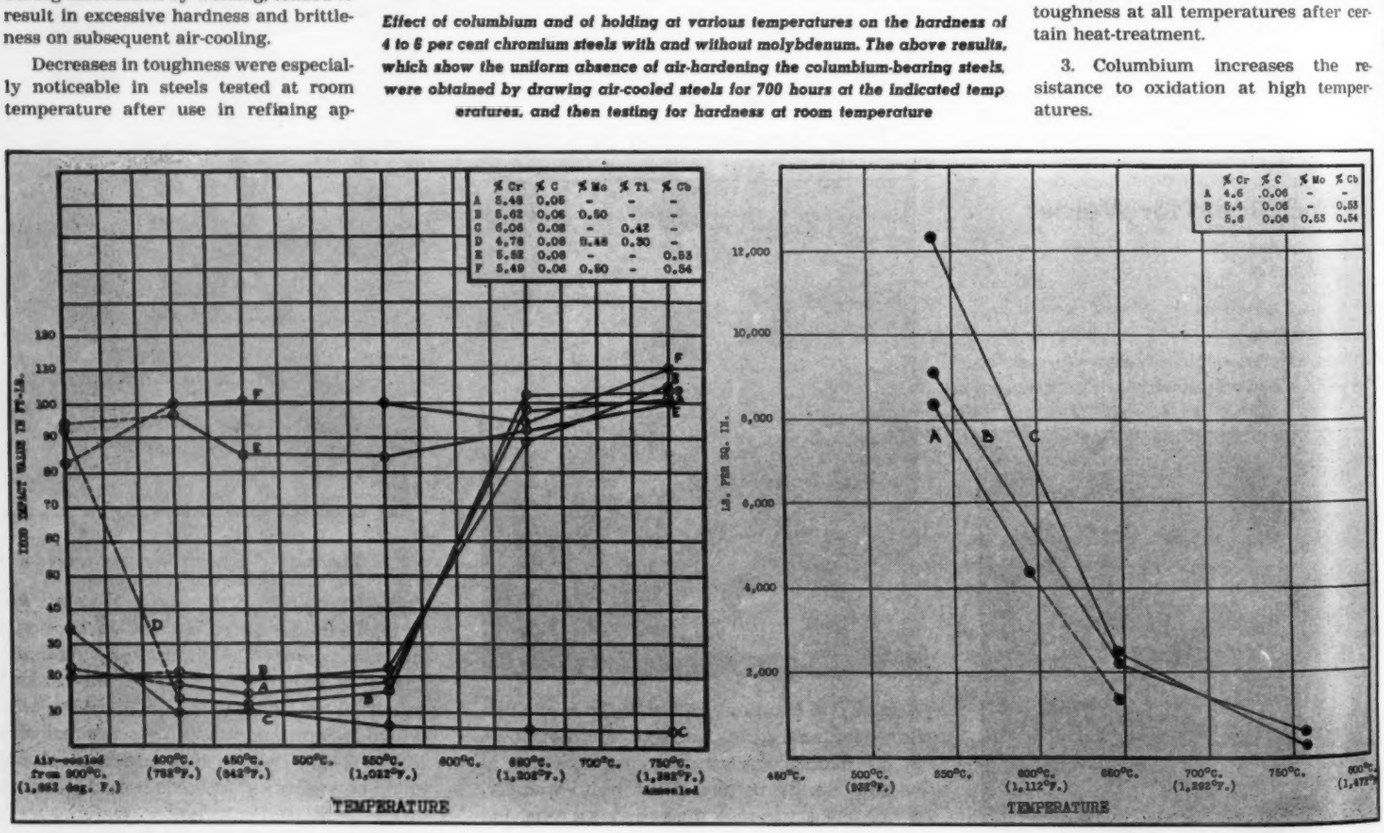
Effect of columbium and of holding at various temperatures on the hardness of 4 to 6 per cent chromium steels with and without molybdenum. The above results, which show the uniform absence of air-hardening the columbium-bearing steels, were obtained by drawing air-cooled steels for 700 hours at the indicated temperatures, and then testing for hardness at room temperature

The addition of columbium to the 4 to 6 per cent chromium steels, especially those containing tungsten or molybdenum, has been exceedingly effective in conferring the necessary improvement in properties. The toughness values of the columbium-bearing steels easily meet the requirements of the petroleum companies. The advantages of columbium in wrought 4 to 6 per cent chromium steels may be summarized as follows:

1. Columbium eliminates or reduces air-hardening, and thereby facilitates fabrication. Of special interest to the oil industry is the improvement in fabrication by welding.

2. Columbium promotes stability of toughness without loss of creep strength after all heat-treatments. This is an outstanding and valuable property, for as a rule 4 to 6 per cent chromium steels that do not contain columbium cannot be depended upon to maintain their toughness at all temperatures after certain heat-treatment.

3. Columbium increases the resistance to oxidation at high temperatures.



Left, effect of columbium and of holding at various temperatures on the toughness of various air-cooled 4 to 6 per cent chromium steels tested at —40° C. The steels represented in this graph were air-cooled from 900° C., held for 700 hours at the indicated drawing temperature, and then furnace-cooled. They were then tested for toughness at —40° C. The two columbium-bearing steels (curves E and F) are the only ones that retain their toughness after this treatment. Right, curves showing the excellent creep strength of columbium-bearing 4 to 6 per cent chromium steels. Improved values are obtained by the addition of molybdenum as is illustrated by curve C

PROBLEMS FROM READERS

Edited by L. G. E. Bignell

Completing Well in Southwestern Indiana

Is it best to shoot first and then acidize or will acidizing alone be sufficient in completing a wildcat test I am drilling in Greene County, Indiana? We expect to find pay in the Niagaran sand below the Chattanooga or Woodford shale in Devonian limestone. Also is it best to set the casing in the black shale if we acidize instead of in the top of the limestone? Some say the black shale is an oil thief formation.—J. D. H.

So far as we can learn it is possible to acidize the Niagaran formation and secure satisfactory results without shooting. This formation is reported as being composed of limestone, dolomite and has a sandy lime but we do not find direct reference to the classification to be expected in the section of Indiana in which you are drilling.

Because of the lack of direct information it might be well for you to have cuttings or core tested with acid before ordering the well acidized because it might require special treatment.

To case the hole it is suggested that a good casing seat on top of the lime will be preferable to one in the shale. It is also suggested that the pipe be cemented at least two joints up from the bottom and this should be done before the well is acidized. The black shales may prove to be friable and if the casing is run with shoe only the shale might later disintegrate and permit upper water to find entrance into the producing zone. Cementing the two bottom joints may later necessitate the breaking of a collar and leaving a small portion of the casing in the hole but this is better than taking chances with the well by a poor casing job.

Does the Iridescent Film on Spring Indicate Oil Seep?

I am interested in a farm located in south central Iowa and this particular land is rolling and on a hillside there is a spring or seepage of water. The water in the spring is coated with a film which I think is oil. This coating is thin and I am wondering whether this film indicates there is crude oil in this vicinity. Where we find the film it is a long way from the roads or any other probable source of refined oil. How can I determine the character of this film without employing a geologist?—F. B. S.

Your letter is of interest. Enclosed please find tear sheet from The Oil and Gas Journal of May 13, 1937, containing an article by W. G. Osborn on "Geological Complex of Iowa Is Problem for Geophysicists." This article should give you some general information about possibilities of gas and oil in south central Iowa.

In regard to the film on the spring water. The following from Emmons' "Geology of Petroleum" may give you some clew to the answer to your question.

"Many oil seeps are associated with springs of water. In some there is merely a slight iridescent film or 'rainbow' of oil above the water. Such a film resembles somewhat the film of iron oxide that covers some pools of water, and iron oxide films have been mistaken for oil films. The iron oxide film differs from the oil film, however, in that it is brittle and will break if the water is agitated, whereas the oil film will not. In many oil springs the oil on the water forms a considerable layer. At some places it is collected by laying a blanket on the pool. The blanket absorbs the oil and is wrung out and the oil recovered. In other springs the oil is skimmed off."

As you state the film on the spring water on your property is thin it is quite probable it is of iron oxide. If the quantity is not sufficient to be readily noticeable it is also quite probable an index for a real oil seep will deliver an appreciable volume of oil in time and can be readily identified as such.

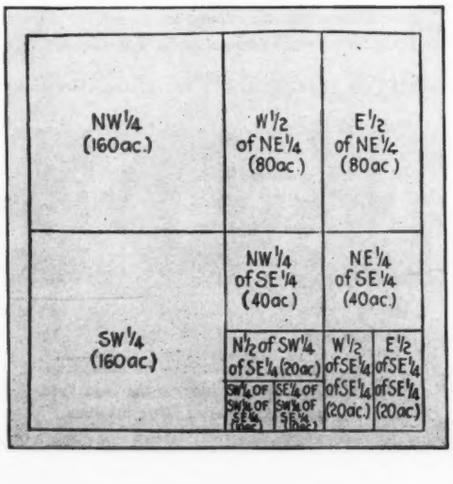
It is hardly necessary to employ a geologist to determine whether this material is oil or some other substance for oil will burn and if a match is thrown on it in the spring it should ignite. However, you must be certain that the oil and not some form of marsh gas that may accompany it is burning. There are some springs from which gas will escape and some of this gas is inflammable while other gas will not burn.

From the report by Mr. Osborn and your description of the spring water film it seems hardly likely you have a real oil seep on your property.

Designating Portions of a Section of Land

In reading reports of field activities I find it a little difficult to follow the descriptions of the land such as N half SW SE and at the same time estimate the acreage involved and locate the position of the piece within the section. Can you suggest something that will make it easier for me to follow such reports?—D. F. S.

The accompanying sketch map of a subdivided section should prove of help but it must be remembered this is only one set of descriptions and there are numerous other combinations. If you will establish in your mind the relative size and position of the pieces of land as shown in the sketch it should not be hard to transfer the position and size of other parcels of land from one portion of the section to another. Each type of subdivision is shown in the sketch down to 10-acre blocks and that is about as small a drilling site as usually described. If a well is started on a still smaller parcel of land it is easy to subdivide the 10-acre plot in a manner similar to that followed in making the map of the entire section.


NW¼ (160ac.)
W½ of NE¼ (80ac.)
E½ of NE¼ (80ac.)
NW¼ of SE¼ (40ac.)
NE¼ of SE¼ (40ac.)
SW¼ (160ac.)
N½ of SW¼ of SE¼ (20ac.)
W½ of SE¼ (20ac.)
E½ of SE¼ (20ac.)
SW¼ of SW¼ of SE¼ (10ac.)
SE¼ of SW¼ of SE¼ (10ac.)

Advisability of Leasing Land

What general information should I have if I have land to lease for oil and gas prospecting? Can there be a great volume of oil drained from our land by the wells on the adjoining land? What is the usual price paid per acre by the company for leases? Is it better to lease early or hold out for more money? Can the company leasing the land next to ours do any great damage for holding out?—J. T. H.

If you are negotiating for the lease of land to an oil company for the purpose of permitting it to explore for gas and oil it is usual practice to use a standard lease form, which is a legal document and can be passed upon by any attorney.

The consideration will vary with the conditions surrounding the property and there is no set price for leases. There will be a more or less uniform price paid for leases in any particular area and it is usual for the landowner to learn something about the going price being paid.

Whether it is better to lease the land early or to hold out until later is one question that cannot be readily answered. If the landowner holds out and the test well comes in dry then it is not likely he can lease his land at all. On the other hand if the test develops gas or oil, the lease might be worth more money than it would have brought before the well was drilled. As it is certain the test will be either a dry hole or a well the mathematical ratio is just 50-50 but whether the landowner can guess right or wrong depends upon his general knowledge of the conditions.

As to damage done by offset wells. It is probable that line wells will drain gas and oil from adjacent property but the amount of damage done will depend upon the method of production followed by the offset well owner and the length of time elapsing before the landowner protects his land by drilling well.

In a general way it may be said that the uninitiated in the oil business can best trust the honesty and integrity of the oil company representatives in such matters and safeguard himself only by securing the advice of a competent attorney on the legal documents before signing. Both the landowner and the oil company has a common interest in the property after the lease has been executed and if the legal form is followed the landowner can depend upon receiving his royalty.

If the landowner will only consider the handling of lease matters has been reduced to a routine matter by all oil companies and he will receive equal consideration with all other landowners and lessees he can feel safe to proceed to lease his land upon the best terms he can obtain. If he has suspicions of the other party he had best not enter into the deal.

There are lease brokers who make a practice of blocking up acreage in any active area, but they for the most part must ultimately transfer their leases to some oil company to do the actual development work so it is safe to deal with the lease broker providing his credentials are satisfactory and your attorney approved the lease form submitted.

There are some books on this general subject and they may be of some interest to the landowner but in the last analysis it is a legal transaction and your own attorney should be able to guide you properly if consulted before the deal is closed.

QUESTIONS ON TECHNOLOGY

By Charles K. Francis, Ph.D., Technical Editor

Stability of Furnace Oils of Gas, Oil and Distillate Type

Please give me some information on any accelerated method of testing fuel oils for stability. This stability refers to sludge deposition with light furnace oils and b.s. and w. deposition with heavy fuel oils in storage.—A. W. T.

The stability of light furnace oils of the gas and distillate type, may be readily ascertained by means of Conradson carbon residue test. This test was originally applied to lubricating oils for comparison of the carbon formed as related to the production of similar deposits in internal combustion engines. Quoting from The Significance of Tests and Petroleum Products:

"It has been found that the carbon residue content of the oil bears a fairly direct relation to the quantity of carbonaceous residue deposited in the carbureting apparatus. Consequently the carbon residue test has been used for determining the carbon-forming tendency of such petroleum products as gas oil and fuel oil.

"In the operation of certain types of oil burning equipment and heavy oil internal combustion engines, the conditions of vaporization and combustion make possible the deposition of a carbonaceous residue, and in such cases, the carbon residue of the oil fuel may be important."

Another test that may be used for this purpose is that for Precipitation Number, which is recommended for the examination of cylinder stocks and lubricating oils. The test method, A.S.T.M. D-91-35, has for its object the determination of the number of milliliters of precipitate formed when 10 ml. of lubricating oil are mixed with 90 ml. of petroleum naphtha and centrifuged under prescribed conditions.

The water content of a petroleum oil may be quite accurately found by means of the distillation test wherein an equal volume of the oil is mixed with pure dry gasoline and then heated in a special flask fitted with a reflux condenser connected to a trap for collecting the water. The sediment and water may be determined by the standard centrifuge test.

All of these tests are fully described in the A.S.T.M. Standards.

It should be noted that water will often collect in tanks containing fuel oils, because of changes in temperature. The tanks are said to sweat.

Reference: A.S.T.M. Standards on Petroleum Products, September, 1936. Carbon Residue, page 61. Water in Petroleum Products, page 339. Water and Sediment by Means of Centrifuge, page 343.

Quantity of Principal Products Obtained From Petroleum

We are asking that you kindly supply us with the figures showing the relative quantities of the principal products currently being refined from crude oil. Can you further give us some idea of the extent of change reflected in these ratios through seasonal factors in demand for the respective products?—G. R. K.

According to the reports of the U. S. Bureau of Mines, there is no wide fluctuation, from month to month, in the quantity of products obtained from petroleum.

The yield of gasoline was 43.5 per cent for June, a decline of 0.4 per cent from the average in May and 0.9 per cent lower than the average of a year ago. The percentage yield was 44.1 in December and 42.7 last January.

The report of June, 1937, furnishes the quantities of the most important products. These are given in the table.

PETROLEUM PRODUCTS IN THE UNITED STATES
JUNE, 1937, DAILY

	Bbls.
Oil refined	3,311,000
Products:	
Gasoline	1,576,000
Kerosene	170,000
Gas oil and distillate fuels	370,000
Residual fuel oils	859,000
Lubricants	100,000
Wax (pounds)	1,372,000
Coke (short tons)	1,120,000
Asphalt (short tons)	157,000

The general condition is reflected in the comments under "Refined Products."

The domestic demand for motor fuel in June was 48,580,000 bbls., or 9 per cent above the average of a year ago. Exports of motor fuel continued high, the total of 3,085,000 bbls. comparing with only 2,291,000 bbls. in June, 1936. Stocks of gasoline, which failed to show the normal decrease in May, declined sharply in June, when 4,624,000 bbls. was withdrawn from finished and unfinished stocks. The total of June 30, 1937, (75,053,000 bbls.) was, however, nearly 8,000,000 bbls. above the level of a year ago.

According to data of the Bureau of Labor Statistics, the price index for petroleum products continued its upward trend in June, the index for that month being 61.5, compared with 60.9 in May and 57.7 in June, 1936.

The refinery data of this report were compiled from schedules of refineries having an aggregate daily crude oil capacity of 3,889,000 bbls. These refineries operated at 85 per cent of capacity in June, compared with 83 per cent in May and 80 per cent in June, 1936.

CHEMICALS FOR THE PETROLEUM INDUSTRY

Bromine

Use—Modification of special preparations, including greases, synthetic compounds.

Form—Redish brown, fuming, volatile liquid.

Odor—Suffocating pungent. The vapors are a dangerous poison.

Symbol—Br.

Atomic weight—79.916.

Specific gravity—3.188.

Melting point, °F.—19.4.

Boiling point, °F.—137.7.

LIMITATIONS

Specific gravity	3.188
Boiling point, °F.	138
Freezing point, °F.	19

Note. Bromine is consumed in large quantities in the process for making the lead fluid used as a knock inhibitor in Ethyl gasoline.

Symbols For Charts, Maps and Drilling Logs

Are there any standard symbols for use on charts for refining processes, maps and drilling logs?—J. L. and E. K. E.

So far as we are informed there is no set of standardized symbols applicable to refining charts and to the formations, or conditions, met with when drilling for oil and gas. The refinery methods seldom require details to be indicated on a chart that are comparable with those of a well log. The common formations are graphically represented by a combination of dots and lines. Sand by numerous dots; lime by horizontal and vertical lines, brick-wall fashion; shale by long lines or simply white space. These are not flexible enough to cover all substances and conditions, so each individual must often devise some arbitrary scheme.

The refiner may use the first letter of a word, such as O. G. or W. for the primary substances oil, gas or water. The products indicated by two or more letters; as As for asphalt, Gl for gasoline, or Wx for wax.

The chemical symbols and formulas are frequently employed. Examples include: Lime, Ca (Calcium); shale, Al (aluminum); sand, SiO_2 (silica); salt, NaCl (sodium chloride). A sandy lime may be indicated by Si/Ca and salt water $NaCl/H_2O$. On maps oil is usually shown by the word or a black field and gas by the word or a white field. Gasoline may be shown on charts by a red field; lubricating oils by blue, yellow and brown, depending on grade, and fuel oil by black.

Capacities of Oil Pipe Lines

What is the volume of oil transported each day by a pipe line having a diameter of six inches? If you will give me the capacities of lines of other sizes the favor will be appreciated.—D. H. N.

The capacity of oil pipe lines vary with the size of the pipe, the physical properties of the oil, the pumping pressure and the character of the country. A line handling a good grade of oil, passing through a country which requires no more than one pump station to each 35 miles, should have the capacities shown in the table.

CAPACITY OF OIL PIPE LINES

Pipe Size inches diam.	Pressure lbs./sq. in.	Bbls./day Deliver	Bbls./mile Contain
2	1200	850	20.517
3	1000	2,150	46.162
4	900	4,200	82.066
6	800	10,800	184.644
8	700	21,000	328.265
10	600	25,000	512.914

The delivery capacity mentioned is based on the oil moving at the rate of 100 miles per day.

First Spark Plug by A. Champion

What is the meaning of AC as applied to a spark-plug? This may not be an oil question but it certainly has a lot to do with the consumption of gasoline.—W. R. T.

The letters AC, which identify a well-known spark plug, are the initials of the late Albert Champion, the first spark-plug manufacturer in the United States.

• If you figure carburizing costs on a part basis, Chrome-Molybdenum (4120) carburizing steel will save several cents per part.

If you figure them on a volume, the savings will run into many dollars.

Chrome-Moly's first cost is lower than that of any other successful alloy carburizing steel. It carburizes with minimum predictable distortion. It machines readily.

Chrome-Moly carburized parts show excellent service records. The steel takes an exceptionally hard, wear-resistant case, and develops good case properties.

This steel has proved an effective answer to the vital question of cutting costs and still maintaining quality. It will well repay investigation. Complete information on request. Climax Molybdenum Co., 500 Fifth Avenue, New York City.

PRODUCERS OF FERRO-MOLYBDENUM, CALCIUM MOLYBDATE AND MOLYBDENUM TRIOXIDE

VISIT OUR BOOTH, C-15, AT THE NATIONAL METALS EXPOSITION

Climax Mo-lyb-den-um Company

MOLY

Mid-Continent Crude Runs to Stills Held at High Levels for October

By D. H. STORMONT

According to estimates made at the first of the month, Mid-Continent refiners will not decrease their runs to stills by any appreciable amount during October as most market observers felt they should be in view of the declining demand for motor fuels. If present plans are adhered to, daily runs will exceed those of October, 1936, by over 80,000 bbls. daily. Stocks of gasoline held by Mid-Continent refiners at the first of October were over 1,000,000 bbls. higher than those this time last year and at the end of the month will probably be even higher due to the high rate of refining activity.

The exceptionally good demand for furnace oils is no doubt having a lot to do with the high crude runs to stills. Many refiners in the Mid-Continent do not have sufficient supplies of these materials on hand, so that they are holding their runs high in an effort to build up their stocks.

The total daily runs during October will be 619,210 bbls., or only slightly less than in September when the total was 625,485 bbls. daily. In Oklahoma daily runs are to be reduced from 182,040 bbls. to 173,105 bbls., the greater part of the decrease being due to the closing down of Barnsdall Refining Corp.'s Okmulgee refinery and a 5,500-bbl. decrease at Continental's Ponca City refinery. The Barnsdall plant was closed down on the first of October and will remain closed indefinitely. The greater part of Oklahoma refiners will hold their runs at levels approximating those of the previous month.

Daily runs in North Louisiana are being increased from 44,140 to 48,640 bbls. for October, East Texas Refining Co. has opened its newly purchased Sandra plant, acquired from Griswold Refineries, Inc., and will process 3,500 bbls. daily. The plant has been enlarged to 4,000 bbls. The Monroe plant of Acme Refining Co. has been abandoned and probably will never be reopened. Atlas Pipe Line Co. and Rodessa Oil & Refining Co. are increasing daily runs in their plants by 500 bbls., other refiners except those mentioned above holding their runs unchanged.

Two new refineries are now planned for this area and when completed will serve to greatly increase the importance of this district. Co-Service Oils, Inc., headed by Douglas McDonald of Shreveport, La., is to build a plant near the Bellevue field at Princeton, and Octane Oil & Refining Co. is to erect a 3,000-bbl. plant in the Cotton Valley field of Webster Parish.

In Southwest Texas total runs are being decreased by some 1,400 bbls. daily as several refiners in that area lowered their crude charging rates by small amounts. The Sullivan City plant formerly operated by the Fordyce Refining Co. is now being operated by the White Wing Refining Co., headed by Ed W. Sullivan. The company has been incorporated for $50,000 and is planning the erection of a cracking plant. According to an announcement of the company, work will probably start within the next 30 days, and when the unit is completed daily charging capacity of the plant will be 1,000 bbls. Another ownership change in that district is that of the Ranne Refining Co. to the Carle Refining Co., Inc. Improvements on the plant are now under way, and the new owners contemplate the erection of a cracking unit.

In the Panhandle runs are being reduced from 81,690 bbls. to 77,340 bbls. daily, while in North Central Texas refining activities are unchanged. Gainesville Refining Corp. has completed erection of a new crude skimming unit which increased its daily capacity from 1,800 to 2,500 bbls. but daily runs in the plant were practically the same as in September. A small skimming plant, owned by Claude Senn of Wichita Falls, is planned for construction in the immediate future on the Henrietta highway, southeast of Wichita Falls.

Comparatively few changes in schedules were reported by refiners operating in Kansas, while in East Texas runs are being increased by 31,000 bbls. to a total of 71,060 bbls. daily. Only some 13 refineries are now operating in the East Texas field out of over 80 plants that were once in operation, the remainder having been dismantled or shut down probably never to be reopened.

Mid-Continent Crude Runs

Average Daily (Barrels)

(Advance estimate compiled by The Oil and Gas Journal)

	1935	1936	1937
January	426,070	501,600	531,535
February	448,810	519,960	541,790
March	451,510	478,760	533,875
April	467,765	506,775	558,385
May	466,015	513,510	572,855
June	485,015	527,225	593,625
July	494,210	539,370	605,640
August	508,960	557,650	624,475
September	541,080	553,215	625,485
October	533,620	536,330	619,210
November	524,475	548,015	.....
December	511,025	535,500	.....

Operations by Refinery Districts

Daily crude runs

	Oct.	Sept.	Decr.
Arkansas	26,550	27,050	500
East Texas	71,060	67,820	*3,240
Kansas	152,800	151,650	*1,150
N. Central Texas	47,200	47,180	*20
North Louisiana	48,640	44,140	*4,500
Oklahoma	173,105	182,040	8,935
Southwest Texas	22,515	23,915	1,400
W. Texas Panhandle	77,340	81,690	4,350
Total	619,210	625,485	6,275

*Increase.

Estimated Daily Average Mid-Continent Refinery Crude Runs for October

ARKANSAS

Company and location—	Daily capacity	Av. dly. runs Oct.	Av. dly. runs Sept.
Berry Asphalt Co., Waterloo	2,000	750	950
Henry H. Cross, Smackover	6,000	5,000	5,000
Lion Oil Ref. Co., El Dorado	12,300	12,000	12,000
Macmillan Pet. Corp., Norphlet	2,500	2,000	2,300
Root Pet. Co., El Dorado	12,000	6,500	6,500
Stephens Ref. Co., Stephens	700	300	300
Total	35,500	26,550	27,050

KANSAS

Barnsdall Ref. Co., Wichita	6,000	5,000	5,000
Bay Pet. Co., McPherson	3,500	2,500	2,000
Chanute Ref. Co., Chanute	2,000	1,000	1,000
Chase Ref. Co., Chase	800	550	550
Cusco Oil & Ref. Co., Chase	3,100	(*)	(*)
Derby Oil Co., Wichita	8,000	6,000	6,000
El Dorado Ref. Co., El Dorado	5,000	4,000	4,000
Falcon Ref. Co., Inc., Great Bend	1,000	600	600
Globe Oil & Ref. Co., McPherson	12,000	12,000	11,000
Kanotex Ref. Co., Arkansas City	12,000	6,500	7,000
Kreuger Ref. Co., Natoma	150	50	50
National Ref. Co., Coffeyville	8,000	5,800	5,800
Pet. Products Co., Chanute	800	700	800
Phillips Pet. Co., Kansas City	23,000	18,250	17,000
Shallow Water Ref. Co., Scott City	1,500	1,500	1,500
Shell Petroleum Corp., Arkansas City	20,000	18,000	18,000
Sinclair Ref. Co., Coffeyville	20,000	9,000	9,000
Sinclair Ref. Co., Argentine	11,000	7,500	7,500
Skelly Oil Co., El Dorado	23,000	21,500	21,500
Socony-Vacuum Oil Co., Inc., Augusta	20,000	18,500	18,500
Standard Oil Co., (Indiana), Neodesha	20,000	10,500	10,500
United Ref. Co., Russell	1,200	600	850
Vickers Pet. Co., Potwin	4,000	2,750	3,500
Total	207,100	152,800	151,650

*Shut down.

EAST TEXAS

Beacon Oil & Ref. Co., Henderson	4,500	(*)	(*)
Cascade Ref. Co., Reed Switch	3,000	1,375	1,405
Clay Ref. Co., Arp	3,500	3,220	2,340
Danciger Refs., Inc., Longview	10,000	5,000	5,000
East Texas Ref. Co., Longview	10,000	7,000	7,000
General American Ref. Co., Gladewater	4,000	2,700	2,245
Hurricane Pet. Corp., Overton	5,000	3,565	2,680
Hurricane Pet. Corp., Arp Ref., Arp	3,750	3,485	1,790
Lacy Ref. Co., Kilgore	3,000	2,200	2,425
Magnolia Pet. Co., Corsicana	5,000	4,770	4,790
Martin Ref. Co., Gladewater	3,000	1,670	1,710
McMurrey Ref. Co., Tyler	10,000	3,560	4,290
Premier Oil Ref. of Texas, Willow Springs	4,500	3,000	3,000
Paluxy Asphalt Co., Talco	5,000	4,000	4,000
Sinclair Ref. Co., Camp Switch	6,000	3,100	3,100
Solvex Refs., Inc., Gladewater	4,500	3,500	3,500
Southport Pet. Co., Kilgore	5,000	3,000	3,000
Talco Asphalt & Ref. Co., Mt. Pleasant	6,500	5,500	5,000
Texas Co., The, Dallas	16,000	8,000	8,000
Tower Ref. Co., Overton	3,000	2,415	2,545
Total	116,250	71,060	67,820

*Shut down.

NORTH LOUISIANA

Arkansas Fuel Oil Co., Bossier City	25,000	20,000	20,000
Atlas Pipe Line Co., Shreveport	12,500	9,000	8,500
Bayou State Oil Corp., Hosston	750	500	500
East Texas Ref. Co., Sandra	4,000	3,500	(*)
Griswold Refs., Inc., Shreveport	1,000	(*)	(*)
North Caddo Ref., Rodessa	1,000	640	640
Rodessa Oil & Ref. Co., Cedar Grove	8,000	7,500	7,000

Company and location—	Daily capacity	Av. dly. run. Oct.	Sept.
Shoreline Oil Co., Lewis	5,000	3,000	3,000
Stanolind Oil & Gas Co., Superior	5,000	4,500	4,500
Total	62,250	48,640	44,140

*Shut down.

NORTH CENTRAL TEXAS

Allstate Ref. Co., Thrall	2,500	(*)	(*)
Baird Ref. Co., Baird	1,500	1,300	1,200
Bryson Ref. Co., Bryson	600	400	400
Coleman Ref. Co., Coleman	750	300	300
Continental Oil Co., Wichita Falls	6,000	4,135	4,000
Crown Oil Co., Fort Worth	1,000	(*)	(*)
Exchange Pet. Corp., Albany	800	200	200
Falls Ref. Co., Wichita Falls	2,000	300	300
Gainesville Ref. Corp., Gainesville	2,500	1,200	1,250
Gratex Ref. & Fuel Oil Co., Graham	300	300	300
Gulf Oil Corp., Fort Worth	8,000	6,800	7,200
Hightower Oil & Ref. Corp., Brownwood	750	100	100
Jacksboro Ref. Co., Jacksboro	250	50	50
Kraco Ref. Co., Bryson	2,000	1,500	1,500
La Salle Pet. Co., Burkburnett	3,500	800	800
Magnolia Pet. Co., Fort Worth No. 1	12,000	5,650	5,240
Midway Ref. Co., Coleman	300	150	150
Norgold Ref. Co., West Olney	500	200	200
North Texas Oil & Ref. Co., Gainesville	600	300	300
Ohio Oil Co., Fort Worth	5,000	4,160	4,160
Olney Oil & Ref. Co., North Olney	3,000	1,800	1,800
Panhandle Ref. Co., Wichita Falls	4,200	2,800	2,900
Panhandle Ref. Co., Luders	1,000	975	880
Sinclair Ref. Co., Fort Worth	5,000	2,865	3,000
Southland Ref. Co., Megargel	500	200	200
Taylor Ref. Co., Taylor	6,000	1,000	1,000
Taxman Ref. Co., Wichita Falls	3,250	3,000	3,000
Texas Pacific Coal & Oil Co., Caddo	1,000	800	800
Tucker Oil Co., Burkburnett	250	165	200
Tydal Ref. Co., Gainesville	1,850	1,750	1,750
Wagoner Ref. Co., Electra	6,000	4,000	4,000
Total	82,800	47,200	47,180

*Shut down.

OKLAHOMA

Anderson-Prichard Ref. Corp., Cyril	6,500	6,000	5,000
Barnsdall Ref. Co., Barnsdall	6,000	4,500	3,500
Barnsdall Ref. Co., Okmulgee	10,000	(*)	3,500
Bell Oil & Gas Co., Grandfield	5,000	3,500	3,500
Black Gold Ref. Co., Oklahoma City	3,000	1,800	1,800
Champlin Ref. Co., Enid	16,000	10,000	10,000
Cities Service Oil Co., Okmulgee	4,000	2,500	2,500
Cities Service Oil Co., Ponca City	12,000	10,000	10,000
Continental Oil Co., Ponca City	30,000	19,000	24,500
Cushing Ref. & Gasoline Co., Blackwell	1,700	1,500	1,700
Cushing Ref. & Gasoline Co., Cushing	6,200	2,400	2,500
Cosco Oil Co., Wynnewood	2,500	2,000	2,250
Deep Rock Oil Corp., Cushing	10,000	9,000	9,000
Eason Oil Co., Enid	5,000	2,500	2,400
Globe Oil & Ref. Co., Blackwell	8,000	5,000	5,000
Johnson Oil Ref. Co., Cleveland	6,000	4,000	4,500
Knox Ref. Co., Covington	250	100	100
Mid-Continent Pet. Corp., West Tulsa	40,000	26,000	26,000
Ohio Oil Co., Bristow	5,000	3,000	3,000
Omar Ref. Co., Garber	4,000	2,800	3,500
Peppers Gasoline Co., Oklahoma City	500	450	450
Phillips Pet. Co., Okmulgee	6,500	5,480	5,480
Pure Oil Co., Muskogee	10,000	8,225	8,700
Pyramid Prod. & Ref. Corp., Oklahoma City	600	400	400
Rock Island Ref. Co., Beckett	6,500	5,500	5,500
Sinclair Ref. Co., Sand Springs	8,000	4,500	4,500
Sooner State Ref. Co., Oklahoma City	700	350	350
Sun Oil Co., Yale	5,000	2,000	2,100
Sunray Oil Co., Allen	6,500	3,225	3,500
Texas Co., West Tulsa	16,000	11,200	11,200
Tide Water Oil Co., Drumright	12,000	12,000	12,000
Triangle Prod. & Ref. Co., Oklahoma City	1,200	950	950
Vinita Ref. Co., Vinita	100	(*)	(*)
Wilcox Oil & Gas Co., Bristow	6,000	3,225	2,660
Total	260,750	173,105	182,040

*Shut down.

SOUTHWEST TEXAS

Amsco Ref. Co., Mirando City	4,500	3,500	4,100
Carle Ref. Co., Inc., San Antonio	1,000	600	500
Humble Oil & Ref. Co., San Antonio	5,000	3,500	3,500
Ina Oil & Ref. Co., Hondo	400	50	50
Magnolia Pet. Co., Luling	8,000	6,315	6,865
Pettus Oil & Ref. Co., Pettus	1,000	800	800
Pettus Oil & Ref. Co., Mathis	1,000	750	800
Phoenix Ref. Co., San Antonio	1,200	1,000	1,000
Phoenix Ref. Co., Bruni	900	600	600
Pioneer Oil & Ref. Co., Somerset	2,000	900	900
Rado Ref. & Prod. Co., McAllen	800	500	600
Texas Co., San Antonio	3,000	2,800	2,800
Valley Ref. Co., Harlington	1,000	700	700
White Wing Ref. Co., Sullivan City	1,000	500	700
Total	30,800	22,515	23,915

WEST TEXAS AND PANHANDLE

Aero Gas Ref. Co., Pecos	225	100	100
Coltex Ref. Co., Colorado	12,500	8,000	8,000
Concho Ref. Co., San Angelo	250	100	100
Cosden Oil Co., Big Spring	15,000	9,500	9,500
Danciger Refs., Inc., Pampa	6,500	5,000	5,000
Danube Oil Corp., Borger	400	400	400
Gibson Oil Corp., Magic City	250	150	150
Gulf Oil Corp., Sweetwater	7,000	5,500	6,700
Howard County Ref. Co., Big Spring	2,000	1,000	1,000
Moutray Oil Co., Hawley	1,400	1,150	1,025
Onyx Ref. Corp., Abilene	2,000	2,000	1,500
Panhandle Ref. Co., Kings Mill	2,500	1,800	1,800
Phillips Pet. Co., Borger	50,000	21,800	23,400
Sageland Ref. Co., Sweetwater	1,000	500	500
Shamrock Oil & Gas Corp., Sunray	2,500	1,500	1,500
Shamrock Oil & Gas Corp., Meldavis	1,600	1,700	1,700
Stamford Ref. Co., Stamford	300	300	275
Standard Oil Co. of Texas, El Paso	14,000	8,300	10,500
Starlight Ref. Co., Ballinger	500	200	200
Texas Co., El Paso	2,000	1,300	1,300
Texas Co., Amarillo	6,000	3,500	3,500
West Texas Ref. Co., Pecos	6,000	1,600	1,600
Western Ref. Co., Mertzon	1,000	400	400
West Texas Oil & Ref. Co., Sweetwater	60	40	40
Wickett Pet. Co., Wickett	3,000	1,500	1,500
Total	130,685	77,340	81,690

Conducting Petroleum Course

Design engineers active in industry will cooperate with members of the department of chemical engineering at Columbia University in conducting a course in the principles of chemical engineering, to be sponsored during 1937-38 by Columbia Extension. Prof. Lincoln T. Work will be in charge.

Planned especially for petroleum refinery engineers, the course will analyze design as the outcome of engineering fundamentals. Topics covered in the first semester will include fluid flow, heat transfer, and the elements of distillation. During the spring session, students will consider distillation, absorption, adsorption, precipitation, crystallization, extraction, filtration, grinding, classification, evaporation, and drying.

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The nationally advertised Sinclair H-C Gasoline and Sinclair Opaline and Sinclair Pennsylvania Motor Oils head a complete line of high-grade petroleum products which includes:

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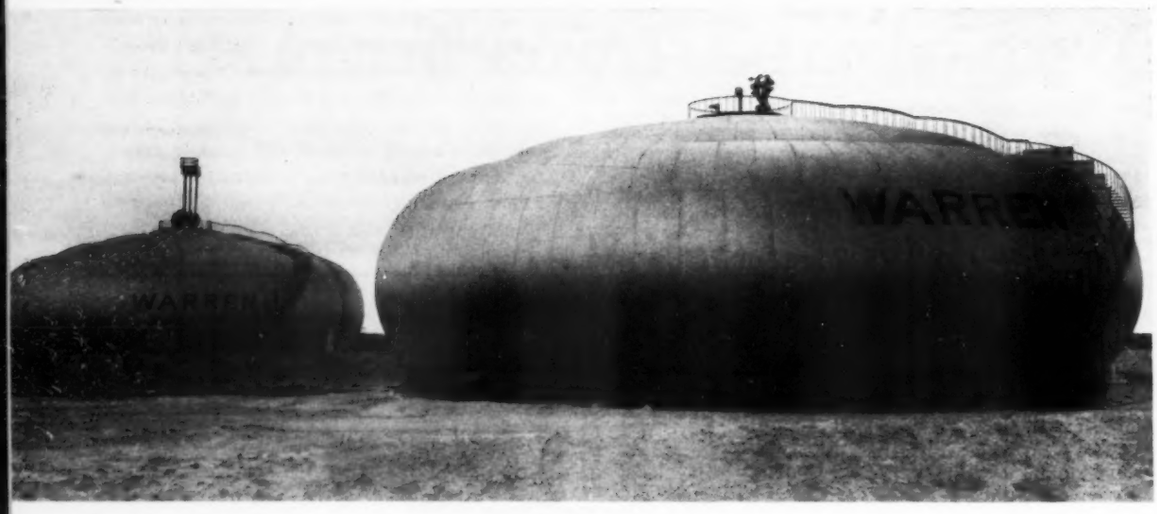
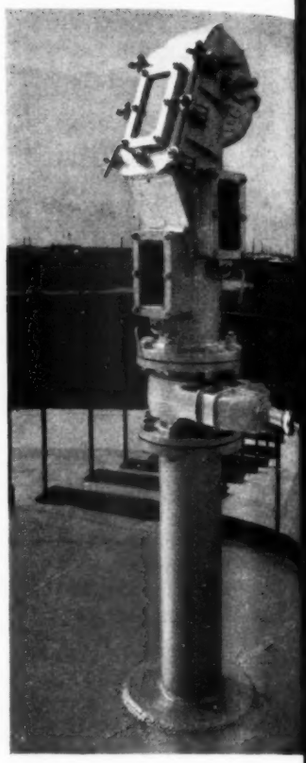


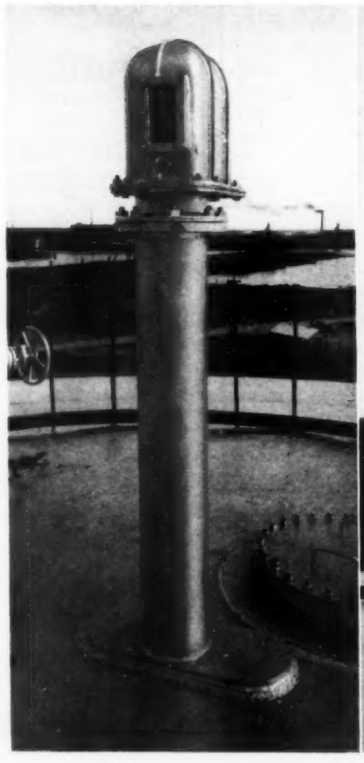


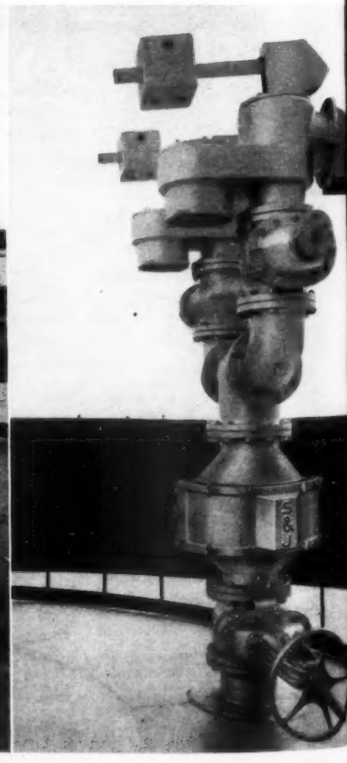
At the right, is the S. & J. Instrument Lock, designed for sampling and taking temperature readings under pressure.

A petroleum storage tank installation that delights the engineer includes a tank that is modern in every respect, and equipped with fittings especially designed for that particular tank. Too often, the adaptation of equipment designed for another purpose has proven a misapplication.

This perfect combination of modern storage tanks, properly fitted, is well exemplified by the Hortonspheroid of the Warren Petroleum Company, shown in the foreground of the picture above. The S. & J. Pressure fittings with which this Hortonspheroid is equipped, were designed specifically for application to Hortonspheroids. They are not adaptations.

When you modernize your storage with Hortonspheroids, you'll want tank fittings made for Hortonspheroids. You may purchase through the tank builder or direct, with full confidence of receiving the right fitting for a specialized application.





At the left, above, is the S. & J. Compensating Type Automatic tank gauge which provides an accurate measurement, unaffected by slight roof movement. At right, above, is the S. & J. Still Type Breather Valve, designed for pressure storage, and also employed as a safety vent. It is shown mounted on an S. & J. Flame Arrester which carries Underwriters' approval.

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FIELD OPERATIONS

Summarizing the Week's Developments

Feature of the week in Oklahoma was the more than one-half mile north extension of the Fitts field, Pontotoc County, by a Hunton lime producer in section 16-2n-7. A Wilcox sand extension well was completed at the south end of the old Braman area, Kay County, Oklahoma, but nine other Oklahoma wildcats were abandoned as failures.

KANSAS

A new area was opened in Ellis County, Kansas, section 18-14-16w, southeast of the Victoria pool. The 3,197-bbl. and 3,430-bbl. pumpers were completed in the Bemis field, Ellis County. A 2,205-bbl. well, also producing 50,000,000 feet of gas, was completed in the Otis-Albert area, Rush County. A gas area was opened in section 22-21-9w, Rice County. A 7,604-bbl. flowing well was completed in the Habiger pool, section 32-17-10w, Ellsworth County.

TEXAS

In Crane County, West Texas district, two wells were completed that started at 11,576 bbls. and 6,360 bbls. per day respectively. Wildcats in Hockley and Yoakum counties are discouraging and the Hockley County test was abandoned. King and Dallam counties in the Texas Panhandle are soon to have tests. Five wildcats were abandoned as dry in Eastern Texas counties. Fifty-five new oil wells were completed in East Texas. Ten outpost tests in widely separated counties in Southwest Texas are showing oil or gas, four of them in the Fault Line area. The Stratton field in Nueces County was extended. In the Texas Coastal area a Segno field outpost cored oil. The Nome field in Jefferson County has prospects of a shallow sand production, but the "shallow" sand is over a mile deep. The Refugio and Heyser fields were extended.

TEX-LA-ARK AREA

The Miller County, Arkansas, side of the Rodessa field was extended northerly and southwesterly in the past week. A 1,590-bbl. well was completed in the Schuler field in Union County, Arkansas.

MICHIGAN

More drilling permits were issued in Michigan up to October 6 of this year than in all of 1936. The Buckeye pool promises to move into Hay Township, on the east of Gladwin Township.

CALIFORNIA

Four miles southeast of the Greeley field discovery well in Kern County, California, 12 feet of saturated oil sand has been uncovered in an outpost well which indicated a production of 2,500 bbls. per day on a drill stem test. A northwesterly outpost to the Greeley field showed indications of a 3,000-bbl. daily production, but is still drilling. Three new wells in the El Segundo field made an aggregate initial production of 9,050 bbls.

NEW MEXICO

The Skelly sand pool was extended 1 mile southward by a small producer in section 15-23-37, Lea County, New Mexico. The northwest edge of the Monument field was extended slightly by a new producer in section 18-19-37. An important wildcat was started in section 1-20-38, 5 miles southeast of the Hobbs field, Lea County.

Completions in All Fields

(Week Ending October 9, 1937)

	Oil	Gas	Dry	Total	1937 total comp. to date	1936 total comp. to date
N. Y., Pa., W. Va.	73	18	10	101	3,436	2,923
Ohio	10	4	3	17	923	597
Indiana	7	2	8	17	87	152
Kentucky	7	3	5	15	492	235
Illinois	11	0	1	12	167	32
Michigan	11	0	7	18	606	648
Kansas	41	3	14	58	2,016	1,294
Oklahoma	31	1	14	46	2,124	1,940
Texas:						
North Central Texas	24	0	13	37	2,191	2,120
West Texas	44	0	5	49	2,102	1,210
Texas Panhandle	15	1	0	16	591	512
East Texas	55	0	3	58	1,838	2,052
East Central Texas	10	0	5	15	555	281
East Texas Border	2	0	0	2	272	92
Gulf Coast Texas	28	3	3	34	1,209	964
Southwest Texas	30	1	15	46	2,557	2,222
Total Texas	208	5	44	257	11,315	9,453
North Louisiana	15	1	2	18	514	530
Gulf Coast Louisiana	2	0	1	3	354	378
Total Louisiana	17	1	3	21	868	908
Arkansas	4	0	2	6	119	72
Montana	4	0	3	7	176	190
Wyoming	1	0	0	1	84	90
Colorado	0	0	0	0	17	21
New Mexico	13	1	1	15	575	450
Utah	0	0	0	0	2	5
California	31	0	9	40	1,186	889
Total United States	469	38	124	631	24,193	19,899
Total previous week	478	59	123	660		
Difference	9	21	1	29		

Outstanding Fields—Highlights

(Week Ending October 9, 1937)

FIELD—	Rigs up	Wells drlg.	Weekly oil completions	Initial prod.	Total No. oil wells	Daily av. prod.
TEXAS						
Hastings	7	20	11	5,922	309	21,737
McCampbell	4	12	3	290	65	4,500
Saxet	2	27	3	610	548	42,550
Benavides	4	13	9	1,615	72	5,906
East Texas	48	100	55	2,588	26,679	484,397
Talco	7	35	7	2,022	497	32,397
Ector County	16	84	17	21,675	663	31,000
Winkler County	12	45	12	7,927	1,446	45,700
OKLAHOMA						
Fitts	4	39	15	1,522	895	70,225
Billings	2	8	1	457	51	6,850
KANSAS						
Ellis County	5	41	8	12,958	218	8,215
Barton County	7	46	7	3,830	230	9,825
Russell County	7	63	7	4,698	883	34,255
Rice County	4	44	5	2,180	992	34,860
NEW MEXICO						
Lea County	12	114	12	2,431	1,485	95,940
LA-TEX-ARK						
Rodessa, Ark.	1	26	3	5,350	15	6,770
Rodessa, La.	0	9	2	343	411	46,169
Rodessa, Tex.	1	22	2	594	350	33,633
Lisbon, La.	1	19	5	4,824	127	6,755
Jennings, La.	3	10	1	400	266	11,512
MICHIGAN						
Buckeye	6	62	4	3,800	242	24,734
CALIFORNIA						
Wilmington	10	24	9	6,858	267	61,400
ILLINOIS						
Central Illinois	27	101	6	4,148	135	15,300

Eastern Field Report

By STAFF CORRESPONDENT

20-MILLION-FOOT GAS WELL, POCA DISTRICT, W. VIRGINIA

PITTSBURGH, Pa., Oct. 11.—Thirty-four operations were completed in the lower Eastern fields during the past week of which 9 were dry holes, 17 gas wells and 8 producers with an initial production of only 40 bbls. a day. Among the completions, there was a large gas well in the Oriskany field in West Virginia, and one more than fair gas well in shallow sands in Southwest Pennsylvania. The deep tests in all three districts have reached an interesting stage, particularly one in Southeast Ohio.

SOUTHEAST OHIO

In section 26, Wayne Township, Columbiana County, Southeast Ohio, the Natural Gas Co. of West Virginia shut down the deep test on the D. Deseilem farm at 6,100 feet and is getting ready to run casing. A string of 6,100 feet of 7-inch O.D. extreme line casing will be run to shut off the water from the Newburg sand topped at 5,912 feet. The Oriskany sand topped at 4,411 feet, after 241 feet of Corniferous lime was void of any showing of gas. This well will be carried down to the Clinton, and will be the first test to it in that area.

In Athens County, E. Gibson and others completed a test on the Grosvenor & Ogg farm in section 30, Rome Township, in Second Cow Run sand at 735 feet. It is a gas well gauging 250,000 feet a day.

In Muskingum County, the Ohio Fuel Gas Co. drilled a second test on the John Hansen farm in the SE quarter of section 21, Newton Township, through the Clinton sand to a depth of 3,560 feet and it was dry.

In Perry County, the Hopewell Fuel & Gas Co. completed a fair shallow-sand gasser in the second test on the Michael Emmert farm in section 8, Reading Township, in Berea sand at 860 feet. It gauges 1,500,000 feet a day. In section 6, same township, Planet Oil Co. and others completed a test on the Thomas Vansickle farm in Berea sand at 902 feet. It is a gas well gauging 300,000 feet a day. In section 33, Monroe Township, Thistle Oil Co. drilled No. 27 R. Drake through the Berea sand to 1,048 feet and it was a dry hole.

In Washington County, John L. Wagner and others completed a small producer on the Milton D. Schramm farm in section 26, Muskingum Township, in the Berea Grit at 1,966 feet. After a shot, it produced one-quarter barrel the first day along with some gas.

SOUTHWEST PENNSYLVANIA

Three oil wells and three gas wells were completed in Southwest Pennsylvania during the past week. In Wayne Township, Greene County, Equitable Gas Co. completed a test on the Sanford C. Brock farm and it is showing for 15 bbls. a day. The top of the Fourth sand was at 2,985 feet and the oil was at the top of the formation. It is located about 1½ miles east of Blacksville, W. Va.

In Aleppo Township, Greene County, on Wagon Road Run, Cochran and Funk No. 6 Strope heirs was completed in the Fourth sand at 3,492 feet. It is showing for 4 bbls. a day. It is located 1,200 feet east of the T. S. and D. Gallentine No. 2, a producer.

In Greene Township, Greene County, Annie L. Garard completed No. 4 J. E. Minor in Dunkard sand, total depth 967 feet, and it is good for 2 bbls. a day. The top of the sand was at 948 feet with the oil at 953 feet.

The best well for the week in Southwest Pennsylvania was the test of the Keystone Gas Co. on the A. C. Horner farm in North Strabane Township, Washington County, which was completed in the Salt sand at a depth of 1,438 feet. It is a gas well gauging about 5,000,000 feet a day.

In Washington Township, Greene County, the Carnegie Natural Gas Co. test on the Sadie A. Connor farm was completed at 3,032 feet. The Fifth sand was topped at 3,009 feet with 536,000 feet of gas showing at 3,010-12 feet.

In Nottingham Township, Washington County, the Robinson Brothers completed a test on the Frank Anthony farm at 2,681 feet. The Fifth sand was at 2,473-2,508 feet with 160,000 feet of gas at 2,476 feet.

Greene County Drilling

In Center Township, Greene County, the Carnegie Natural Gas Co. has not drilled in the Nineveh Thirty Food sand on the No. 2 J. H. Orndoff, having had difficulty with a crooked hole below the cave above the sand. This company is drilling at 1,365 feet No. 3 J. W. Milliken. The Natural Gas Co. of West Virginia is down 3,317 feet in No. 4 Braddock and Cooks, with little oil showing in the Thirty Foot sand. Union Gasoline & Oil Corp. is drilling at 3,300 feet in No. 4 Mable Bodley. Manufacturers Light & Heat Co. is down 3,234 feet in No. 2 W. L. Fordyce, with the Gordon sand at 3,156-94 feet and 68,000 feet of gas at 3,166 feet. Charles Mong is building rig for No. 2 Jesse L. Metz (Weir). The Rutan Oil Co. was drilling at 810 feet in No. 4 C. T. Harvey.

In Richhill Township, J. L. Blair made a location on the W. J. Bryan farm. O. I. Dille has run the 6⅝-inch casing in the test on the J. M. Phillips farm. In Aleppo Township, the Union Gasoline & Oil Corp. is down 1,625 feet in No. 5 Galentine.

In Springhill Township, Nelson H. Richard Co. is drilling at 2,250 feet on the Rossell Sammons farm. In Gilmore Township, H. D. Freeland and others were drilling at 2,700 feet in No. 1 R. B. Koen. In Wayne Township, the Equitable Gas Co. is building a rig for No. 2 Sanford C. Brock. Manufacturers Light & Heat Co. is rigging up No. 3557 on the Haddie J. Ross land. In Dunkard Township, the Convex Glass Co. is shut down at 1,335 feet on the Van Voorhis farm.

In Washington Township, the Equitable Gas Co. is rigging up No. 1 Pratt Yeager. Charles Mong has the rig standing for the No. 2 Jacob Johns.

Washington County

In Union Township, Washington County, Beadle & Clark are drilling on the Martin Rankin farm, at 1,565 feet. In Peters Township, R. M. Duden and others are rigging up No. 3 W. J. Johnston. Benedum & Trees, Inc., is drilling at 4,550 feet on the Mary Boone farm, with the Bradford sand at 4,171-90 feet.

In North Strabane Township, McClelland Brothers are drilling at 2,570 feet on their fee lease. Keystone Gas Co. is down 1,180 feet on the J. T. Beabout farm. In South Strabane Township, the Carnegie Natural Gas Co. has reached 650 feet in No. 1 C. M. Guthrie.

In Amwell Township, the Union Gasoline & Oil Corp. is drilling No. 8 A. O. Vankirk at 1,980 feet. Carnegie Natural Gas Co. is down 250 feet in No. 4 N. B. Redd. In South Franklin Township, the South Penn Oil Co. No. 2 Piedmont Coal Co. is drilling at 2,060 feet. Dunn Mar Oil & Gas Co. reached 670 feet in No. 4 J. T. Baldwin. In Morris Township, Duquesne Gas Co. No. 8 Carter heirs is down 924 feet. William Smith has reached 800 feet in a test on the Phillip Fonner farm.

Deep Tests

In Lawrence County, western Pennsylvania, Carnegie Natural Gas Co. deepened the test on the W. A. Currie farm in Shenango Township to 4,696 feet with the top of the Oriskany sand at 4,634 feet. There was no showing of oil, gas or water. The tools are now in the Helderberg and will drill down to the Newburg.

In Allegheny County, the test of the South Penn Oil Co. and others on the Christian Z. Schove farm in Hampton Township, is fishing for tools lost above the cave. The hole reached 6,238 feet before the gas blowout and at present the upper string has been drilled by and the socket run to grab.

In Washington County, the crew on Norwood P. Johnston and others test on the James McBurney farm in Mount Pleasant Township, is fishing for a sand line lost after the bailer was stuck.

In South Union Township, Fayette County, Potter Development Co., William E. Snee and others are down with a fishing job in No. 2 Summit Hotel at a depth of 990 feet. In North Union Township, Frank Fairman and others No. 1 Louis Vardell is shut down at 900 feet.

In Armstrong County, Clarence Loudin and others drilled a test on the Harkleroad farm in Plum Creek Township, which shut down at 3,498 feet with a showing of 167,000 feet of gas in the Bradford sand.

WEST VIRGINIA

Four small producers were completed in West Virginia during the week. In Boone County, Pure Oil Co. No. 278 Williams Coal Co. tract, in Sherman district, drilled Berea sand to 3,161 feet. It is good for 8 bbls. a day.

In Gilmer County, Carnegie Natural Gas Co. completed a test, No. 1 Rohrbough and Peters, in Center district, at 1,846 feet, Maxon sand, and it is showing for 8 bbls. a day.

In Ritchie County, J. W. Jones completed No. 31 West Virginia Oil Co. lease in Grant district in the Gas sand at 500 feet. It will make a half-barrel pumper.

In Wirt County, Oil City Trust Co. completed No. 64, Roberts, Pell and Newman lease, in Spring Creek district, in Cow Run sand at 920 feet and it is good for 1 bbl. a day and some gas.

Gas Wells

In Braxton County, Pittsburgh & West Virginia Gas Co. completed No. 7600, on the G. B. Howell land, Birch district, as a gas well at 1,975 feet. Gas at 1,920-24 feet and 1,954-62 feet. The gauge is about 100,000 feet a day. In Otter district, this company drilled No. 7641, J. W. Smith farm, to 2,679 feet and it was dry.

In Cabell County, H. H. Baker Gas Co. test on the Augusta Beckett farm in McComas district, is a gas well at 3,341 feet, good for 900,000 feet per day. It was deepened from the Injun sand to Brown shale.

In Gilmer County, Gilmer County Gas Co. test on the Ivy Gainer farm in Center district, is a 75,000-foot gas well at 2,148 feet.

In Kanawha County, the United Fuel Gas Co. completed No. 4754, Jennie G. Lewis land, in Elk district, at 1,923 feet. It is good for 337,000 feet of gas per day in the Weir sand at 1,821-39 feet.

In Lewis County, B. F. Cayton drilled a test on the John Moody farm in Freemans Creek district through the Dunkard sand to 620 feet and it was a dry hole.

In Marion County, the R. S. Monroe Co. drilled a test on the William Laughlin farm in Mannington district in the Fifty Foot sand at 2,680 feet and it is good for 200,000 feet a day.

In Marshall County, the Union Gasoline & Oil Corp. completed No. 2 S. B. Higgins in Liberty district at 2,250 feet as a gas well gauging 738,000 feet a day. The Big Injun was topped at 2,149 feet with the gas at 2,239-42 feet.

In Monongalia County, the Pittsburgh & West Virginia Gas Co. deepened No. 5196, Alpheus Henderson farm, in Clay district, through the Fifth sand to 3,412 feet. It is a small gas well.

In Pleasants County, there were two dry holes. Grant and Atha drilled No. 2 J. R. Smith through the Cow Run sand to 610 feet and it is being abandoned. Dinsmoor & Co. drilled a test on the M. L. Smith farm

(Continued on Page 89)

California Field Report

NEW OIL SAND IN GREELEY OUTPOST, IN KERN COUNTY

By L. P. STOCKMAN

LOS ANGELES, Calif., Oct. 11.—Completion of several prolific wells in the El Segundo, Wilmington and North Belridge fields, and discovery of 12 feet of oil sand in Superior Oil Co. No. 9 Kern County land, a wildcat 4 miles southeast of the discovery well in the Greeley field of Kern County, featured developments in California during the current week. A formation test at 7,560-7,605 feet indicated a daily flow at the rate of 2,500 bbls. of clean 28.5-gravity oil and approximately 1,500,000 feet of natural gas. The tester was open one hour and oil and gas reached the surface in 16 minutes. Siltstone was logged immediately below the oil sand, so the production possibilities of the area remain to be determined. This sand was logged below the Stevens sand, productive in the Greeley and Ten Section fields, but which was barren in Superior's wildcat. Superior Oil Co. has resumed drilling in No. 9 Kern County land in section 3-30-26. This wildcat is about 1 mile northwest of No. 1 Kern County land in section 11-30-26, a joint test of Superior Oil Co and Union Oil Co. abandoned as dry a few months ago at 12,618 feet. The location of No. 9 Kern County land with respect to Standard Oil Co.'s development work in the Greeley field was shown on a map appearing on page 269 of The Oil and Gas Journal in the issue of September 16, 1937.

Greeley Field

In the Greeley field, Standard Oil Co. No. 12-2 Kern County land, a northwesterly outpost in section 16-29-26, flowed on a formation test at the rate of 3,000 bbls. of clean 33-gravity oil and about 2,000,000 feet of gas daily from 7,631 feet. It is rotating ahead at 7,712 feet. Oil sand was topped at 7,600 feet, the highest point at which the pay has been found in the field.

El Segundo

The northwest end or town lot area of the El Segundo field of Los Angeles Basin is rapidly becoming one of the real hot spots due to completion of several excellent producing wells and a substantial increase in drilling operations. The outer limits of production have not yet been defined in the northwest end of the field and while operators are drilling numerous wells in the town lot area they are proceeding cautiously as they step north. Government Petroleum Co. is starting two new wells on the G. L. C. property in the town lot area one of which is the most northerly in the field and Wilshire Oil Co. is building rigs for two new wells to be drilled on the Elsie lease on Grand Avenue near Oregon and Kansas Streets. Almost all development under way at present is located in the western end of the field which is divided from the eastern section, where original drilling occurred, by a fault which bisects the productive area in a northwest to southeast trend.

During the past week three excellent producing wells were completed and two or three more are expected within another few days. Standard Oil Co. carried off completion honors by completing No. 3 Refinery on fee-owned acreage, flowing 3,840 bbls. of clean 27.1-gravity oil and 2,900,000 feet of gas per day. No. 3 Refinery was bottomed at 7,091 feet and finished with a 5-inch liner. No. 2 Refinery has been bottomed in schist at 7,393 feet and liner is being run at present. Richfield Oil Corp. No. 2 Elsie, offsetting Standard Oil Co. No. 3 Refinery, has been completed flowing 3,840 bbls. of clean 26.9-gravity oil and 2,350,000 feet of gas per day from 7,050 feet. It was finished with 176 feet of 7-inch liner including 150 feet of perforated landed on bottom and 6,846 feet of 3-inch tubing. Sunshine Oil Co. No. 1 Elsie-Edison located a few hundred feet north of Richfield Oil Corp. No. 2 Elsie has been completed flowing 1,370 bbls. of relatively clean 27.2-gravity oil daily from 7,111 feet. Gas production is increasing in this well and is expected to reach 1,500,000 feet daily in a few days. The Texas Co. No. 3 Security, an offset to Standard Oil Co. No. 1 Refinery, will be put on the beam. Union Oil Co. No. 3 El Segundo, another well that would not flow, is pumping 260 bbls. of 26.3-gravity oil daily from 7,520 feet. It has only been on production about four hours and production may build up after the well has been able to clean itself out.

Wilmington

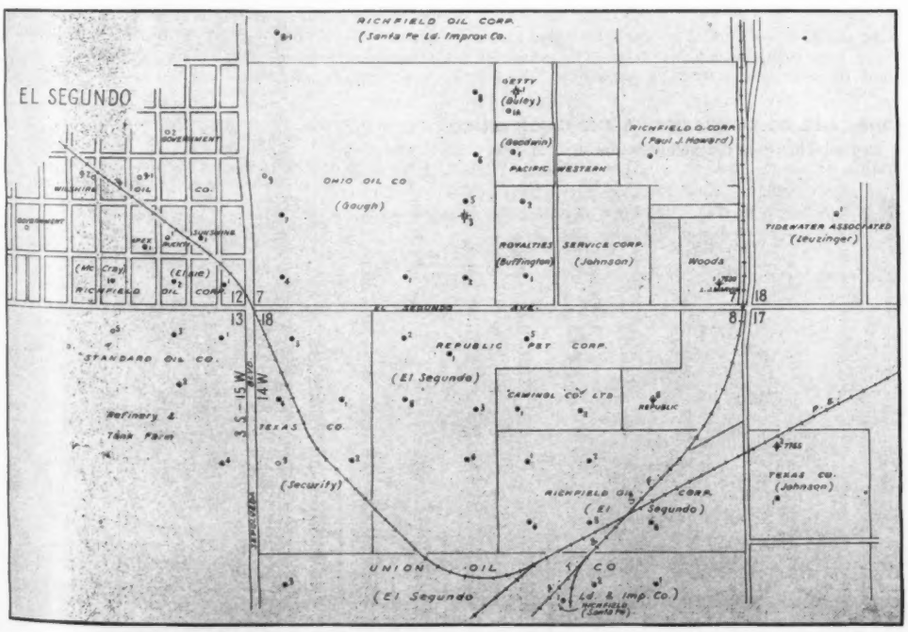
General Petroleum Corp., discoverer of the Wilmington field, headed the completion list in the Wilmington field. Its No. 12 Ford was brought in flowing 3,004 bbls. of relatively clean 28.1-gravity oil per day from 4,040 feet, was finished with an 8⅝-inch combination

TANKER SHIPMENTS FROM LOS ANGELES TO DOMESTIC AND FOREIGN PORTS

	September 30		September 23			
Intercoastal-domestic:	Total this week	Daily average	Total last week	Daily average	This year to date	Same time last year
Crude oil	61,750	8,821	.....	.....	129,788	.....
Diesel and gas oil	.....	.....	.....	.....	176,726	151,541
Gasoline	228,396	32,628	203,311	29,044	3,373,933	5,061,041
Kerosene	.....	.....	.....	.....	328,907	968,157
Foreign exports:						
Crude oil	740,810	105,687	449,347	64,192	11,257,127	7,219,787
Fuel oil	604,909	86,416	454,779	64,968	10,950,020	7,921,613
Diesel and gas oil	178,111	25,444	35,920	5,131	5,981,354	4,241,847
Gasoline	19,561	2,794	214,879	30,697	6,296,858	5,638,095
Kerosene	102,242	14,606	54,609	7,801	1,746,313	1,197,058
Lubricants	.....	.....	12,984	1,855	12,984	.....
Other unfinished oil	.....	.....	60,959	8,708	910,122	132,908
Coastwise-domestic:						
Crude oil	64,680	9,240	158,762	22,680	3,810,498	5,056,050
Fuel oil	200,879	28,697	258,141	36,592	11,637,490	7,714,822
Diesel and gas oil	44,012	6,287	23,461	3,352	1,768,154	877,592
Gasoline	319,524	45,647	353,049	50,436	11,803,775	9,555,097
Kerosene	4,506	644	.....	.....	313,125	138,814

TANKER SHIPMENTS FROM SAN FRANCISCO TO DOMESTIC AND FOREIGN PORTS

Intercoastal-domestic:						
Diesel and gas oil	.....	.....	.....	.....	152,932	.....
Gasoline	.....	.....	.....	.....	25,778	227,419
Kerosene	.....	.....	72,750	10,393	72,750	.....
Asphalt	.....	.....	.....	.....	351,394	267,431
Lubricants	.....	.....	.....	.....	25,522	43,543
Foreign exports:						
Crude oil	.....	.....	279,169	33,896	2,236,637	2,357,035
Fuel oil	123,722	17,675	.....	.....	1,737,346	2,107,097
Diesel and gas oil	.....	.....	86,685	12,383	2,457,484	1,444,652
Gasoline	108,672	15,525	245,909	36,573	4,099,834	2,830,830
Kerosene	.....	.....	78,630	11,233	778,893	546,419
Lubricants	.....	.....	30,057	4,294	455,797	268,440
Other unfinished oil	.....	.....	.....	.....	.....	90,923
Coastwise-domestic:						
Fuel oil	186,212	26,602	102,580	14,654	4,995,566	5,203,110
Diesel and gas oil	78,164	11,166	52,984	7,569	1,011,920	515,382
Gasoline	61,437	8,777	106,127	15,161	3,909,440	3,803,983
Kerosene	.....	.....	36,124	5,161	224,946	158,017



The townsite of El Segundo is becoming one of the real hot spots due to the recent completion of two good wells in the southeastern part of the town, and on the Standard Oil Co.'s refinery and tank farm just south of it. The western side of the field has not yet been defined

string cemented through perforations at 3,587 feet and which included perforations at 3,590-3,929 feet and at 3,990-4,040 feet. The well also included 3,577 feet of 3-inch tubing and is flowing through a 1-inch bean, tubing pressure of 210 pounds and casing pressure 660 pounds. General Petroleum Corp. No. 4-A Isco was good for 201 bbls. of 15.3-gravity oil per day from 3,660 feet. It is flowing through a 1-inch bean under a tubing pressure of 10 pounds and a casing pressure of 675 pounds.

Union Pacific Railroad Co., in the Wilmington field, completed two wells. No. 4-C was bottomed at 3,432 feet and finished with 521 feet of 8⅝-inch and 6⅝-inch liner. Of this total 435 feet consisted of 8⅝-inch liner including 404 feet of 60 mesh screen and 86 feet consisted of 6⅝-inch liner carrying 34 feet of 60 mesh screen. It flowed 1,170 bbls. in 24 hours. No. 38 Offset, which flowed 590 bbls. initially, was bottomed at 3,375 feet and is flowing through a 32/64-inch bean under a tubing pressure of 140 pounds and a casing pressure of 520 pounds.

Richfield Oil Corp. has leased the Proctor & Gamble property in the eastern end of the Wilmington field but will not be allowed to erect any rigs on the surface area of the lease. In order to develop this lease the company has concluded arrangements whereby wells will be located on surface locations on the three-acre **George Breslin property and whipstock** beneath the Proctor & Gamble property. Pacific Western Oil Co. has announced its intention to drill a new deep test in the town lot area of Wilmington field and work on No. 1 Rowan now bottomed in the upper zone at 2,953 feet will be watched with interest and contrasted with the result of the deep test drilled by Royalty Service Corp. on the Gilmore property.

Gus Pongratz completed No. 2 Banning in the Wilmington field, flowing 540 bbls. of relatively clean 17.4-gravity oil per day from 3,620 feet. Macmillan Petroleum Corp. completed No. 7 Hayes flowing 310 bbls. of clean 16.8-gravity oil per day from 3,580 feet after the hole had been finished with a 6⅝-inch combination string carrying 692 feet of perforated and which was cemented through perforations at 2,885 feet. This well is flowing through a 28/64-inch bean under a tubing pressure of 170 pounds and a casing pressure of 310 pounds. A. J. O'Dell and D. D. Dunlap's initial completion in the Wilmington field was good for 278 bbls. of 15.7-gravity oil cutting 7 per cent per day from 3,634 feet. This new well was brought in flowing through a 22/64-inch bean under a pressure of 200 pounds on the tubing and 325 pounds on the casing. Bankline Oil Co. completed No. 25 Dominguez Harbor flowing 610 bbls. of clean 21.5-gravity oil per day from 3,307 feet and No. 10 Pacific Terminal flowing 155 bbls. of relatively clean 17.5-gravity oil daily from 3,387 feet. The former was finished with 327 feet of 6⅝-inch liner including 306 feet of perforated landed at 3,303 feet and the latter was completed with 292 feet of 6⅝-inch liner including 275 feet of perforated landed at 3,385 feet. No. 25 D. H. C. was brought in flowing through a 22/64-inch bean under a tubing pressure of 165 pounds and a casing pressure of 630 pounds and No. 10 P. T. C. was completed flowing through a 28/64-inch bean under a pressure of 90 pounds on the tubing and 550 pounds on the casing.

Belridge-Lost Hills

In the North Belridge field of Kern County, Belridge Oil Co. extended the limits of production by completing No. 61-26 in section 26-27-20, flowing 3,168 bbls. of 31.6-gravity oil and 4,347,000 feet of gas per day from 8,400 feet. It was finished with 407 feet of 4¾-inch liner including 360 feet of 200-mesh screen landed on bottom and 7,986 feet of 2½-inch tubing. It is producing from the Wagonwheel zone of Eocene age and was brought in flowing through a single 1½-inch bean under a tubing pressure of 225 pounds and a casing pressure of 1,825 pounds. Belridge Oil Co. has two additional wells in this field scheduled for early completion and is rigging up rotary drilling equipment in No. 61-27 located in section 27-27-20, south of Texas Co. No. 1 Martin in section 22-27-20. The latter well on a formation test conducted several days ago indicated a potentiality of 2,000 bbls. of 31.3-gravity oil and approximately 3,000,000 feet of gas daily. The bit is going ahead in oil sand at 8,287 feet.

Tide Water Associated Oil Co. has already started to drill an offset to the Texas Co. No. 1 Martin and is rigging up equipment for No. 7 Reward in section 34-27-20.

In the Lost Hills field Standard Oil Co. completed No. 4 United in section 2-26-20, pumping 183 bbls. of 14.5-gravity oil and 78 bbls. of sand and water. It was bottomed at 1,296 feet. On the Williamson property in the same area Tide Water Associated Oil Co. completed No. 11-B pumping 125 bbls. of 14.3-gravity oil daily from 997 feet after the hole had been plugged back from 1,100 feet and finished with 53 feet of 8⅝-inch liner including 32 feet of perforated.

Round Mountain

In the older section of the Round Mountain field Honolulu Oil Corp. completed No. 25 in section 18-28-29, pumping 70 bbls. of 21.6-gravity oil daily from 1,915 feet, and well No. 43 in section 20-28-29, pumping 446 bbls. of 15.1-gravity oil per day from 2,152 feet. This company's next completion should be No. 23 in section 20-28-29, now nearing the pay and the next well to be spudded in will be No. 75 in section 18-28-29.

Tampico Petroleum Co. in the Round Mountain field of Kern County completed No. 3 Bass and Goodknight in section 17-28-29, doing 300 bbls. of relatively clean 17.5-gravity oil daily from 1,867 feet. This new well started flowing after the crew had finished installing pumping equipment. It is west of the east Round Mountain field where Eastmont Oil Co. developed commercial production a few months ago and east of the original productive area of the Round Mountain field.

Mount Poso

In the Ring area, north of the older section of the Mount Poso field, Vedder Petroleum Corp. abandoned No. 1 Hyde in section 32-26-28, as a duster at 1,918 feet. The Vedder zone was topped at 1,901 feet. Last week this company abandoned No. 29-3 Bowles as a dry hole at 1,863 feet for the same reason. Ring Oil Co. which discovered this new productive area a few months ago completed No. 29-4 Bowles in section 29-26-28, pumping 275 bbls. of 16.6-gravity oil daily. This well was bottomed at 1,744 feet, with top of Vedder sand at 1,689 feet. Sunset Oil Co.'s initial completion in this district was good for 61 bbls. of 17.1-gravity oil daily from 1,592 feet after the hole had been finished with 101 feet of 5¾-inch liner including 70 feet of 125 mesh screen. This company has six locations available and has already spudded in No. 4 Vedder in section 28-26-28.

Kern County

In the Mountain View field of Kern County Hogan Petroleum Co. recompleted No. 3 Peters and returned it to production pumping 220 bbls. of 24.1-gravity oil daily from 5,212 feet. This well was completed a month ago flowing 650 bbls. daily from 5,460 feet but failed to hold up. Initial production and present production showed cuts of 20 per cent and 40 per cent respectively. Out in the Kern Front section of the Kern River field, the Texas Co. completed No. 9 Lehman in section 23-28-27, pumping 236 bbls. of 15.6-gravity oil per day from 2,065 feet and began rigging up No. 11 Lehman for early work. In the older section of the Kern River field A. Fuhrman completed well No. 10 in section 28-28-28, pumping 20 bbls. of 13.2-gravity oil cutting 7 per cent from 620 feet. In the Fruitvale field Sandy Oil Co. completed No. 2 in section 26-29-27, pumping 10 bbls. of oil and a considerable quantity of water from 3,497 feet after the hole had been plugged back from 3,590 feet.

Coastal Area

In the coastal area Hancock-Bush interests No. 2 Hopkins in the Santa Maria Valley field was brought in flowing 1,450 bbls. of 17.3-gravity oil daily from 4,185 feet after the hole had been plugged back from 4,503 feet where dips ranging as high as 80 degrees were encountered. The hole was then finished with 1,034 feet of 6⅝-inch liner including 1,003 feet of perforated. No. 2 Hobbs of Pacific Western Oil Co. was good for 112 bbls. of 17.1-gravity oil cutting 6 per cent daily from 4,132 feet, finished with 254 feet of 7-inch liner including 237 feet of perforated landed on bottom. Union Oil Co. has made a "mystery" of No. 2 LeRoy, an outpost in section 13-10-35. The footage being recorded at 5,250 feet indicates, however, that the Franciscan basement has not yet been reached. Top of the Monterey has been estimated at 5,175 feet. E. H. Moore also has put the scouts on the spot by refusing to release any data on his No. 2 Union Sugar outpost in section 19-10-34, rotating ahead at present around 4,990 feet. This well has shown some evidences of resulting in production and may extend the productive limits of the area. The Union Sugar lease adjoins the LeRoy property of Union Oil Co. and if commercial production is secured on the latter two

(Continued on Page 92)

STANDARD OIL CO. OF CALIFORNIA AND UNION OIL CO.

Crude oil prices at the well effective June 22, 1936

Gravity	Signal Hill (Long Beach)	Seal Beach	Alamitos Heights	Huntington Beach	Inglewood	Playa del Rey	Olinda-Brea Canyon	Athens-Rosecrans	Dominguez	Elwood Terrace	Torrance	Richfield	Whittier E. Coyote (La Habra)	Montebello	W. Coyote Hills	Santa Fe Springs	Mountain View	Elk Hills Buena Vista Hills Midway-Sunset Lakeview Area	Lost Hills	Coalinga	Wheeler Ridge	Ketleman Hills	Santa Paula*	Orcutt*
14-14.9	$.80	$.79	$.74	$.78	$.79	$.80	$.76	....	....	....	$.80	$.76	$.76	$.77	$.78	....	....	$.70	$.70	$.70	....	....	$.70	....
15-15.9	.80	.79	.74	.78	.79	.80	.76	....	....	....	.80	.76	.76	.77	.78	....	....	.70	.70	.70	....	....	.70	....
16-16.9	.80	.79	.74	.78	.79	.80	.76	....	....	....	.80	.76	.76	.77	.78	....	....	.70	.70	.70	....	....	.70	$.70
17-17.9	.80	.79	.74	.78	.81	.80	.76	....	....	....	.80	.76	.76	.77	.78	....	....	.70	.70	.70	....	....	.71	.70
18-18.9	.80	.79	.74	.78	.84	.80	.78	....	....	....	.82	.76	.76	.77	.78	....	....	.70	.70	.70	....	....	.73	.72
19-19.9	.82	.79	.74	.82	.87	.84	.81	....	....	....	.85	.76	.78	.77	.78	....	$.70	.74	.74	.71	$.70	....	.75	.74
20-20.9	.85	.79	.74	.85	.90	.88	.84	....	....	....	.88	.78	.82	.77	.80	....	.70	.78	.78	.72	.70	....	.77	.77
21-21.9	.88	.79	.74	.89	.93	.93	.88	....	....	....	.91	.80	.85	.77	.84	$.78	.73	.82	.82	.74	.70	....	.79	.80
22-22.9	.92	.82	.74	.92	.96	.98	.92	....	....	....	.93	.84	.89	.79	.88	.78	.77	.87	.86	.78	.72	....	.82	.83
23-23.9	.95	.86	.77	.96	.99	1.02	.96	$.84	$.79	....	.96	.88	.93	.82	.92	.78	.80	.92	.90	.82	.76	....	.85	.86
24-24.9	.99	.91	.80	1.00	1.02	1.06	.99	.88	.81	....	.99	.91	.96	.85	.96	.82	.84	.97	.94	.86	.79	....	.87	.89
25-25.9	1.03	.95	.82	1.03	1.05	1.11	1.03	.93	.83	....	1.02	.95	....	.89	.99	.86	.88	1.01	.98	.90	.83	....	.90	.91
26-26.9	1.06	1.00	.85	1.07	1.09	1.16	1.06	.98	.86	....	1.05	.98	....	.92	1.03	.90	.91	1.06	1.02	....	....	....	.92	.93
27-27.9	1.10	1.05	.88	1.11	1.12	....	1.10	1.03	.88	....	....	1.02	....	.96	1.06	.95	.95	1.10	1.06	....	....	....	.95	....
28-28.9	1.14	1.10	.90	1.14	1.15	....	1.14	1.07	.90	....	....	1.06	....	.99	1.10	.99	.99	1.15	1.10	....	....	....	.97	....
29-29.9	1.17	1.15	.93	1.18	1.18	F.O.B.	1.17	1.12	.93	....	....	1.09	....	1.03	1.14	1.03	1.02	1.20	1.14	....	....	....	.99	....
30-30.9	1.21	1.19	.95	1.22	1.21	our	1.21	1.17	.95	F.O.B.	....	....	....	1.07	1.17	1.08	1.06	1.25	1.18	....	....	....	1.01	....
31-31.9	....	....	....	....	1.24	Pipe	1.24	1.22	.97	Ship	....	....	....	1.11	1.21	1.12	1.09	1.29	....	....	....	....	....	....
32-32.9	....	....	....	....	1.27	Line	1.27	1.27	1.00	....	....	....	....	1.14	1.25	1.16	1.13	1.34	....	....	....	....	....	....
33-33.9	....	....	....	....	....	....	....	1.32	....	$1.28	....	....	....	1.18	1.28	1.20	1.17	1.38	....	....	....	$1.19	....	....
34-34.9	....	....	....	....	....	....	....	1.37	....	1.32	....	....	....	1.22	1.32	1.25	1.20	....	....	....	....	1.23	....	....
35-35.9	....	....	....	....	....	....	....	1.42	....	1.35	....	....	....	1.25	....	1.29	....	....	....	....	....	1.27	....	....
36-36.9	....	....	....	....	....	....	....	1.46	....	1.39	....	....	....	1.29	....	1.33	....	....	....	....	....	1.31	....	....
37-37.9	....	....	....	....	....	....	....	1.51	....	1.43	....	....	....	1.32	....	1.37	....	....	....	....	....	1.35	....	....
38-38.9	....	....	....	....	....	....	....	1.56	....	....	....	....	....	1.36	....	1.42	....	....	....	....	....	1.39	....	....
39-39.9	....	....	....	....	....	....	....	1.61	....	....	....	....	....	1.40	....	....	....	....	....	....	....	1.43	....	....
40-40.9	....	....	....	....	....	....	....	1.66	....	....	....	....	....	1.43	....	....	....	....	....	....	....	....	....	....

Newhall, McKittrick, Kern River, Kern Front and Round Mountain, 70 cents for all grades. *Posted by Union Oil Co. Same company's Brea Canyon schedule stops at $1.14 for 28 degrees and over, and Belridge and Lost Hills schedule stops at $1.32 for 37 degrees and over.

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Among Gulf Coast Drilling Contractors

W. V. Bowles has spudded a second test in the old Hull field for the Texas Co. It is No. 10 Hannah fee. Bowles is drilling below 4,000 feet on No. 8 for the same company.

Ben (Bud) Coyle was testing No. 1 Banta-Roanes at the Jeanerette field in St. Mary Parish, which has the appearance of opening a 10,000-foot horizon for the field. On the North Starks Prospect, No. 2 Lutcher Moore was plugged back and the hole is to be sidetracked. This is one of the most interesting tests drilling in Coastal Louisiana.

Al Buchanan of San Antonio has opened production for himself in the Heyser field, Calhoun County, by the completion of Blanco Oil Co. and Buchanan No. 1 C. S. Dunwoody, which flowed 192 bbls. per day through a 5/32-inch choke. The rig is being moved over for No. 2 Dunwoody. The recent discovery of two sands, one at 5,500 feet and the other at 5,700 feet, which extended production into Victoria County, has resulted in a wide-spread development program, and the field has possibilities of becoming one of the largest in the Lower Gulf Coast district. With the exception of Humble Oil & Refining Co., which operates two rotaries, the majority of the drilling is being done by contractors.

T. A. Carlton is drilling below 4,000 feet at the Hitchcock field, Galveston County, for the Merit Oil Co. and is expected to start coring for the sand by early this week.

N. W. Hunter is drilling No. 1 Stewart for himself. It is below 4,209 feet and is scheduled to start coring.

Cron & Gracey have spudded Shell Petroleum Corp. No. 3-B Realty at the Gibson field in Terrebonne Parish in Coastal Louisiana and continues drilling operations with 10 other rigs located as follows: Five in the Hastings and Dickinson fields for the Stanolind Oil & Gas Co.; one at Flour Bluff for Humble Oil & Refining Co.; one at Tomball for Shell Petroleum Corp.; two at Hackberry for Stanolind Oil & Gas Co., and one at Lake Long for Fohs Oil Co.

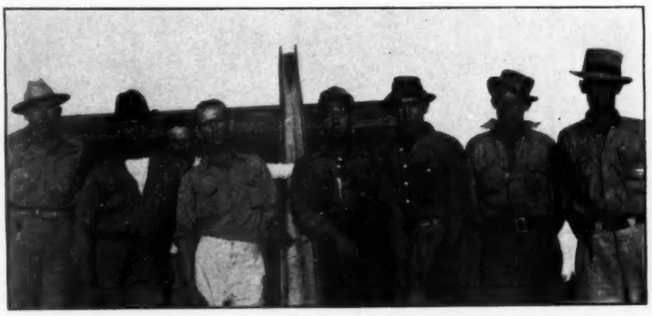
George Echols completed Magnolia Petroleum Co. No. 2 O. M. Lander at Heyser for an initial production of 31.42 bbls. per day through a 9/64-inch choke and has moved the rig to No. 4 Lander for the same company. He is nearing the pay on his own No. 2 O. M. Lander and is rigging up for No. 1 W. H. Bennett. One other outfit is located in the Lodi area in Marion County for Fohs Oil Co.

R. B. (Cap) Fields is coring below 7,400 feet at the Cedar Bayou Prospect in Chambers County for Merit Oil Co., and after it reaches the contract depth of 7,500 feet, the hole will be plugged back and tested at approximately 6,500 feet where several sands showed oil, gas and salt water. He has one rotary on location at Jennings in Acadia Parish for Frank Bennett.

Loffland Bros.' attempt to open production from a 12,000-foot horizon in the Abbeville field in Vermilion Parish for the Continental Oil Co. is being held up due to mechanical trouble. The hole is bottomed at 11,909 feet. At South Jennings their No. 1 Fontenot is drilling below 5,700 feet.

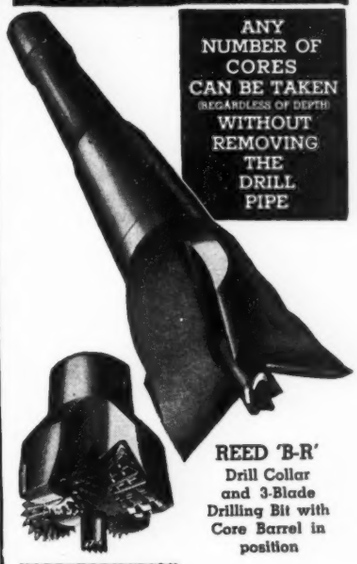
O. W. Dyer is coring oil sand in the Magnet field in Atlantic Refining Co. No. 5-B Cockburn. He has spudded No. 4 Sealy Hutchins at Dickinson for the same company, and in the Lower Gulf Coast district is operating four rigs in the McCampbell field, Aransas County, and is drilling a wildcat in Hidalgo County for the same company.

Glenn H. McCarthy is nearing the 10,000-foot horizon in the Palacios field in Matagorda County, in Sun Oil Co. No. 1 Bay Shore Farm, Inc., which is coring below 9,930 feet. He has two rigs operating in the same field for the Atlantic Refining Co. while at Amelia he has one rig drilling for himself.



Two crews of O. W. Dyer change tour in the early morning and show a 15-foot solid core recovery. Left to right they are: R. C. Shrade; Henry Welchel, (driller); E. J. Wren; I. L. Gregory; Johnny Staggs, (driller); Joe Tajen; A. R. Wells and Jack Howell, (tool pusher). The crews are drilling a deep test for the Atlantic Refining Co. in the McCampbell field of Southwest Texas

REED'S 'B-R' DRILLING BIT WITH WIRE LINE RETRACTABLE CORE BARREL



REED 'B-R' Drill Collar and 3-Blade Drilling Bit with Core Barrel in position

HARD FORMATION HEAD (INTERCHANGEABLE WITH SOFT FORMATION HEAD)

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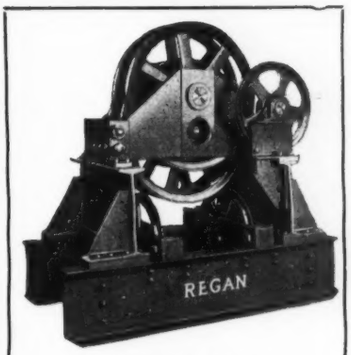

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RODESSA IN ARKANSAS GETS TWO PROLIFIC EXTENSIONS

By MITCHELL TUCKER

SHREVEPORT, La., Oct. 11.—Two oil wells were completed in the Miller County, Arkansas, section of the Rodessa field in the past week, extending the production limits to the north and to the southwest.

F. W. Burford No. 1 S. B. Davis, SW cor. SE NE section 11-20-28, flowed 65 bbls. hourly on a completion test through three-quarters inch tubing choke, total depth 6,157 feet. The nearest producer to this well is Burford No. 3 Eason, which is approximately one-quarter mile north and slightly west.

H. L. Hunt No. 2 Womack, NE cor. SW SE section 10-20-28, was given acid treatment and flowed approximately 650 bbls. of oil and then went dead. The well will be swabbed. Total depth is 6,120 feet. It is located approximately five-eighths mile west of the original producer in this area and one location south of nearest production.

F. W. Burford No. 1 Carver-Means, SW cor. NW section 11-20-27, which is located approximately 6 miles east from the field, has been abandoned at a reported depth of 6,250 feet.

H. L. Hunt No. 1 Womack, SE cor. section 10-20-28, was acidized and refused to flow. The well will be put on beam The total depth is 6,130 feet.

W. M. Layton No. 4 Terry, SW cor. of fractional section 14-20-28, flowed 108 bbls. hourly on completion test through open tubing, total depth 6,060 feet.

McClanahan and others No. 1-B Capps, SW cor. section 12-20-28, flowed approximately 960 bbls. on 15-hour test through 1¾-inch tubing choke, total depth 6,112 feet.

At the close of the week there were 26 wells either drilling or rigging up to drill in this part of the Rodessa field. The daily average production was 6,770 bbls. from 15 wells.

Estimated Daily Production

Estimated daily gross production all companies week ending October 8:

NORTH LOUISIANA

	Bbls.
Bellevue	725
Caddo light	3,840
Caddo heavy	2,630
Converse	700
Cotton Valley heavy	440
Cotton Valley light	*3,515
De Soto and Red River	1,500
Elm Grove	390
Haynesville	3,075
Holly	105
Homer	2,460
Lisbon	6,755
Pleasant Hill	130
Rodessa	46,170
Sarepta-Carterville	320
Sligo	195
Sugar Creek	410
Urania	2,735
Zwolle	690
Total	76,785

SOUTH ARKANSAS

Champagnolle	1,310
El Dorado	1,950
Lisbon	280
Miller County	425
Nevada	725
Rodessa	6,770
Schuler	7,850
Smackover light	2,070
Smackover heavy	16,900
Stephens	580
Troy	560
Urbana	1,175
Total	40,595

Texas side of Rodessa field 33,635 bbls. daily.

*3,070 bbls. is distillate.

RODESSA—LOUISIANA

Magnolia Petroleum Co. No. 1 G. W. Hardy, NW cor. S half fractional section 1-23-16, flowed at the rate of 9 bbls. per hour through three-quarters inch tubing choke, total depth 6,055 feet. This well is located approximately 1 mile north and slightly west of nearest production to the south and 1½ miles from production to the southwest.

Standard Oil Co. of Louisiana No. 1-C Parker and others, NE cor. NE NW section 9-23-16, flowed 155 bbls. daily through a one-quarter inch tubing choke, total depth 6,012 feet. The two above wells were the only completions on the Louisiana side of the field last week. The daily average production for the past week was 46,170 bbls., 411 wells.

Cass and Marion Counties

Last week there were two completions in the Texas side of the Rodessa field. In Cass County, Union Producing Co. No. 4 Allday, P. Evans Survey, flowed 60 bbls. daily on initial test through one-quarter inch tubing choke, total depth 6,016 feet. Nine wells were drilling.

In Marion County, Shell Petroleum Corp. No. 1 L. Henderson, R. Bennington Survey, flowed 530 bbls. daily on initial test through one-quarter inch tubing choke, total depth 6,013 feet. Fourteen wells were drilling or rigging up to drill. The daily average production for the past week was 33,635 bbls., 350 wells.

LOUISIANA

Six completions were added to the Lisbon field in Claiborne Parish, Louisiana. The daily average runs by Gulf Refining Co. showed 6,756 bbls.

R. L. Bauman No. 1 C. S. L. Patton, NW cor. SW NE section 1-20-5, flowed 85 bbls. per hour through 1-inch tubing choke after acid treatment, total depth 5,347 feet.

T. L. James & Co. No. 1 D. E. Fowler, NW cor. NE SW section 32-21-4, flowed and swabbed 10 bbls. per hour through open tubing, total depth 5,224 feet.

Magnolia Petroleum Co. No. 1 Fowler, SW cor. SE SW section 32-21-4, flowed 8 bbls. per hour through 14/64-inch tubing choke after acid treatment, total depth 5,254 feet.

C. H. Vaughn and others No. 1 Eppinger, SW cor. section 29-21-4, flowed 55 bbls. per hour through one-half inch tubing choke after acid treatment, total depth 5,129 feet.

Lyons & Neely No. 2 H. W. Patton, SW cor. NW section 6-20-4, flowed 33 bbls. per hour through one-half inch tubing choke after acid treatment, total depth 5,335 feet (Lincoln Parish).

Magnolia Petroleum Co. No. 1 F. Corbin, NE cor. section 6-20-4, flowed 400 bbls. in 21 hours through one-quarter inch tubing choke after acid treatment, total depth 5,336 feet (Lincoln Parish).

Claiborne Parish—Sugar Creek

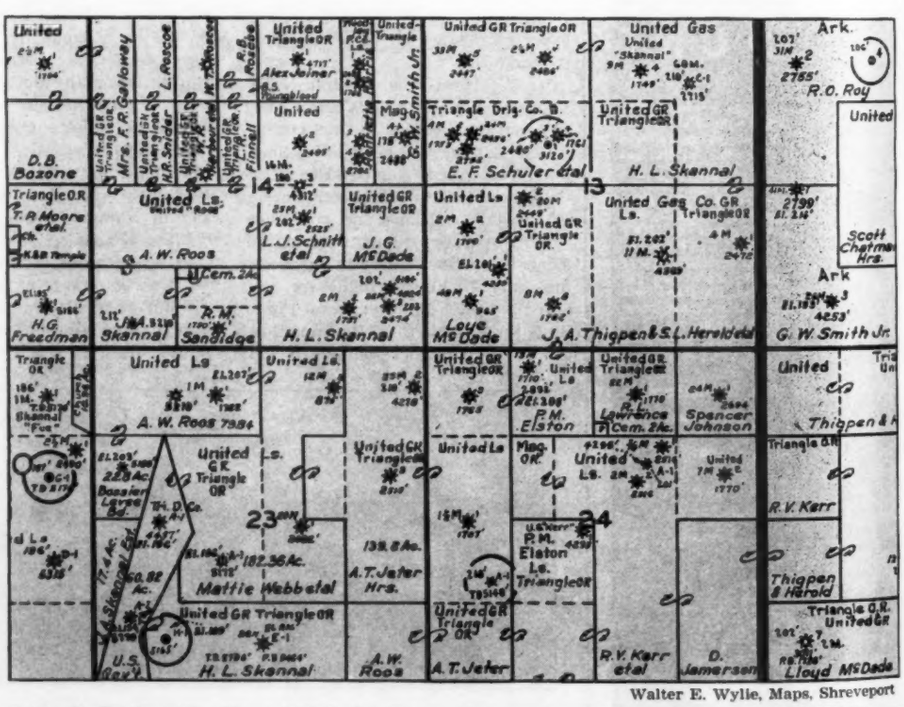
Union Producing Co. No. 1 Brownfield, NW cor. NE section 6-19-5, flowed estimated 75,000,000 feet of gas at a total depth of 5,740 feet. This well was previously reported completed in December, 1930, gauged 37,828,000 feet of gas at 4,392 feet.

Caddo Parish

W. D. Ambrose No. 3-B Pender, SW cor. NW SW section 11-20-15, in the old Pine Island field, flowed 185 bbls. on initial test, total depth 2,196 feet.

Louisiana Oil Production Co. No. 10-B Muslow, SW

(Continued on Page 89)



Walter E. Wylie, Maps, Shreveport

Triangle Drilling Co. No. 1-A Schuler Estate, SE quarter NW quarter section 13-17-12, was flowing 43-gravity crude by heads to indicate a new oil zone at 3,117 feet in the Sligo gas field of Bossier Parish, Louisiana. About a year ago, Union Producing Co. (United Gas Public Service Co.) discovered oil in the Pettit at a depth of 5,150 feet on the southwest flank of the field where there are now six oil producers

Kansas Developments

By
DAL DALRYMPLE

BIG PRODUCER IN OTIS POOL; NEW RICE COUNTY GAS AREA

A gas discovery was recorded in Rice County the past week only to have completion delayed by a fire, a Barton County wildcat had a show of oil in Kansas City lime but was drilling ahead toward Siliceous pay, and completion of a producer in the Tenny area of Ness County was indicated. Producers rated respectively as the "largest pumper" and the "largest flowing well" in Kansas were near completion in Ellis and Ellsworth counties.

The Rice County strike was at Gerbrand & Pulse No. 1 Wellman, SW cor. section 22-21-9w, 11 miles southwest of Lyons and 3 miles south of Alden. The wildcat, producing 3,000,000 feet of gas, blew in at total depth of 3,317 feet in Conglomerate pay. It caught fire shortly afterward and burned for eight hours before extinguished by steam. Operators were to rebuild rig and resume setting of 6-inch casing.

Brouk, Duwe, National Refining Co. and others No. 1 Gory, NW NW SW section 10-17-13w, wildcat 4 miles northeast of Hoisington in Barton County, had a showing of oil in Kansas City lime topped at 3,248 feet but operators passed it up after testing and were drilling below 3,300 feet, seeking Siliceous lime pay.

Oriental Oil Co. No. 1 Tenny, NE NE SW section 19-18-25w, west offset to the discovery well in the Tenny area, western Ness County, was given a good chance to be a producer as operators prepared to drill cement plugs in 6⅝-inch casing set at 4,335 feet, total depth 4,385 feet. The discovery well, Newton Development Co. No. 1 Tenny, NW NW SE section 19-18-25w, has never been completed but operators have been swabbing 42.1-gravity oil at intervals for several months.

Deep Rock Oil Corp. No. 20 Baumer, SE NW NE section 27-11-17w, Bemis field, Ellis County, pumped 1,148 bbls. of oil in eight hours, making potential of 3,430 bbls., to rate as Kansas' biggest pumping well. It had Siliceous lime pay at 3,516-30 feet. It was not listed in the week's completions, but another large pumper was completed on the Baumer lease.

Skelly Oil Co. No. 1 Zink, SW cor. section 32-17-10w. Habiger pool, Ellsworth County, made 24-hour potential of 7,604 bbls. of oil after acidization. It was said to be the largest flowing well in Kansas. It was bottomed at 3,018 feet in Lansing lime.

Wildcat Completions

A new producing area was opened southeast of the Victoria pool in Ellis County at Buffalo Oil Co. No. 1 Phillip, NE cor. section 18-14-16w. The wildcat found anhydrite at 1,050 feet, Howard 2,880 feet, Topeka 2,915 feet, Kansas City lime 3,174 feet, Conglomerate 3,422 feet, Siliceous lime 3,433 feet, total depth 3,446 feet, plugged back to 3,364 feet and perforated casing at 3,225-68 feet. It was shot and acidized, swabbed 393 bbls. of oil in nine hours and on potential test pumped 269 bbls. in the first four hours, 253 bbls. the next four hours and made potential of 1,519 bbls. of oil.

Four other wildcats were failures and one wildcat location was abandoned.

L. M. Reynolds and others No. 1 Polcyn, SE SE NE section 24-13-16w, Ellis County, topped Siliceous lime at 3,397 feet, had a hole full of water at 3,417-24 feet, total depth, and was dry and abandoned.

Cities Service Oil Co. and Texas Co. and 1 Boxberger B, NE cor. section 23-13-15w, Russell County, had Siliceous lime at 3,295 feet, water intruded and it was abandoned at 3,350 feet, total depth.

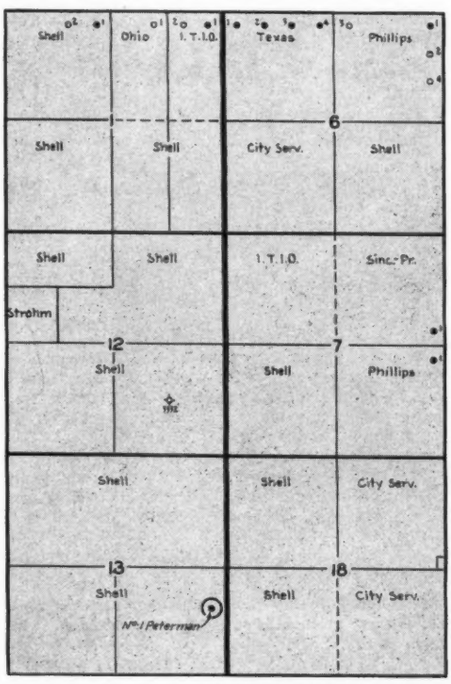
Western Kansas Oil & Refining Co. and others No. 1 Suderman, SE SW NW section 22-20-2e, Marion County, topped Simpson formation at 3,025 feet, Siliceous lime 3,110 feet and was dry and abandoned at 3,125 feet, total depth.

Becker Brothers and others No. 1 Venn, NW SW SE section 22-25-14, Woodson County, had a hole full of water and was dry and abandoned at 1,519 feet, total depth.

Colonial Oil Co. and others No. 1 Scheufler, SW SW SE section 5-21-11w, Stafford County, was an abandoned location.

Barton County

Eight wells were completed in Barton County, the largest producer being Indian Territory Illuminating Oil Co. No. 5 Bryant, NW cor. section 25-20-11w, Peter pool. It had Siliceous lime at 3,254-60 feet, total depth 3,275 feet, swabbed and flowed 355 bbls. of oil in six



Mid-Continent Map Co., Wichita

Shell Petroleum Corp. opened a new producing area in Barton County in section 13-16-14w, which may be a far south extension of the Trapp pool

hours, and on test pumped 412 bbls. in the first four hours, making potential of 2,475 bbls.

Gulf Oil Corp. No. 4 Sessler, CNL SW section 24-20-11w, had Siliceous lime at 3,290-3,306 feet, total depth, with a slight showing of oil, and was temporarily abandoned.

Stanolind Oil & Gas Co. No. 2 Panning, SW SW NE section 2-20-11w, west of the Silica field, topped Siliceous lime at 3,268 feet, was bottomed at 3,291 feet, was acidized and made potential of 1,773 bbls. of oil.

Same company's No. 3 Kowalsky, NE cor. section 11-20-11w, Kowalsky area, swabbed 40 bbls. of oil in two hours after first acid treatment and made potential of 739 bbls. after second treatment. Top of Siliceous lime was 3,278 feet, total depth 3,311 feet.

I. W. Murfin No. 1 Lanterman, SE SW NE section 15-19-11w, Lanterman pool, had pay at 3,378-82 feet, total depth, and made potential of 410 bbls. of oil. Top of Siliceous lime was 3,342 feet.

National Refining Co. No. 7 McLean, SE cor. section 25-17-11w, Bloomer district, topped Siliceous lime at 3,284 feet, had pay at 3,288-3,305 feet, total depth, pumped 191 bbls. of oil in the first four hours and made potential of 1,184 bbls.

Texas Co. No. 1 Disque, SE SE SW section 3-17-11w, Kraft pool, found Siliceous lime at 3,307 feet, was bottomed at 3,344 feet, was acidized and made potential of 1,037 bbls. of oil.

Stanolind Oil & Gas Co. No. 6 Riemann, NE SW NW section 34-16-13w, topped Siliceous lime at 3,402 feet, total depth 3,405 feet, swabbed 44 bbls. of oil in two hours, was acidized and made potential of 1,650 bbls. of oil.

New work in Barton County: Lario Oil & Gas Co. and Atlantic Refining Co. No. 1 Bryant, SE cor. section 23-20-11w, moving in material; Stanolind Oil & Gas Co. No. 5 Schartz, NE SE NW section 2-20-11w, cellar; same company's No. 4 Schartz, SE NE SW section 2-20-11w, rig; same company's No. 5 Panning, NW SW NE section 2-20-11w, cellar; Shell Petroleum Corp. No. 2 Schneider B, NW NE NW section 1-16-14w, moving in tools.

Rice County

Republic Natural Gas Co. No. 7 Wendell, NE SE SE section 32-19-10w, Silica field, Rice County, found Siliceous lime at 3,277 feet, total depth 3,284 feet, was acidized, pumped 460 bbls. of oil in the first four hours and made potential of 2,548 bbls.

Carter Oil Co. No. 5 Risse, NE SE SW section 33-19-10w, found Siliceous lime at 3,308 feet, was bottomed at 3,318 feet, pumped 99 bbls. of oil in nine hours, was acidized, pumped 270 bbls. of oil in five hours, reacidized, pumped 229 bbls. of oil in the first four hours of potential test and made potential of 1,386 bbls.

Saco Oil Co. No. 3 Wickerham A, SE SW SE section 7-20-9w, Chase field, topped Siliceous lime at 3,292 feet, total depth 3,310 feet, pumped 900 bbls. of oil in 6½ hours. Later it was acidized and made potential of 992 bbls.

Atlantic Refining Co. No. 2 Hopkins B, SW NE SW section 6-21-7w, Saxman area, found Conglomerate at 3,330 feet, total depth 3,344 feet, was shot and made potential of 378 bbls. of oil.

Continental Oil Co. and others No. 2 Wood, NW SW SE section 12-18-8w, Geneseo district, had Siliceous lime at 3,172 feet, was bottomed at 3,240 feet, acidized, pumped 343 bbls. of oil the first four hours and made potential of 1,777 bbls.

New work in Rice County: El Dorado Refining Co. No. 3 Gossman, NW SE SW section 5-21-7w, cellar; Hartman & Blair No. 2 Schartz, SW NW SE section 33-19-10w, rig; Sinclair Prairie Oil Co. No. 4 Bolton, SW cor. section 31-18-7w, spudded.

Russell County

Seven new producing wells were completed in Russell County. W. I. Southern, Inc., No. 9 Sellens heirs, NW SE SW section 29-15-13w, Trapp field, topped Siliceous lime at 3,329 feet, total depth 3,332 feet, acidized, pumped 431 bbls. of oil the first four hours and made potential of 2,589 bbls.

Coralena Oil Co. No. 6 Deines, NW SE NE section 36-15-14w, was acidized and made potential of 2,939 bbls. of oil from Siliceous lime topped at 3,271 feet, total depth 3,273 feet.

Cities Service Oil Co. No. 2 Krug D, SE SW SE section 24-15-14w, found Siliceous lime at 3,332 feet, total depth 3,334 feet, acidized, made potential of 815 bbls. of oil.

Coralena Oil Co. No. 3 Chester Sellens, NW SW NW section 29-15-13w, an old well, was deepened from 3,270 feet to Granite at 3,608-10 feet, total depth, and recompleted as a water disposal well.

Carter Oil Co. No. 4 Josephine, SW SE SE section 7-15-13w, had Siliceous lime at 3,230½ feet, was bottomed at 3,238 feet, pumped 268 bbls. of oil in four hours and made potential of 1,607 bbls.

Cities Service Oil Co. No. 1 Maag, SE SW SE sec-

tion 7-15-13w, had Kansas City pay at 3,023-42 feet, topped Siliceous lime at 3,291 feet, total depth 3,322 feet, plugged back to 3,063 feet, shot and acidized, pumped 157 bbls. of oil and 20 bbls. of water in 24 hours, and on potential test pumped 120 bbls. in the first four hours, and 50 in the next four hours, making potential of 300 bbls.

Stanolind Oil & Gas Co. No. 13 Dortland C, SE NE SE section 5-14-15w, Gorham area, topped Kansas City lime at 3,038 feet, total depth 3,077 feet, was acidized, swabbed 65 bbls. of oil in two hours and made potential of 611 bbls. of oil, with an estimated 200 bbls. of water.

Same company's No. 24 Mermis, NE SE NE section 5-14-15w, had Kansas City lime at 3,035 feet, total depth 3,084 feet, acidized, swabbed 23 bbls. of oil and 2 bbls. of water in one hour, and made potential of 576 bbls. of oil, with 15 bbls. of water.

First reports of new activity in Russell County: Gulf Oil Corp. No. 6 Mollie, NE NW SW section 25-15-14w, rig; same company's No. 10 Hoffman, SW cor. section 31-15-13w, rig; W. I. Southern, Inc., No. 13 Boomhower A, SW NE NE section 30-15-13w, rig; Coralena Oil Co. No. 7 H. Sellens, NW NE NW section 30-15-13w, rig; same company's No. 4 G. Sellens, SW SW SE section 20-15-13w, rig; Carter Oil Co. No. 8 Detrich, NE SE SW section 8-15-13w, building rig; Central Petroleum Co. No. 10 Fister B, SE NW NE section 3-14-15w, cellar; W. C. McBride, Inc., No. 1 Jellison, NE NE SW section 19-13-14w, location.

Ellis County

Deep Rock Oil Corp. completed another big pumper in the Bemis field, Ellis County, at No. 18 Baumer, NE cor. section 27-11-17w. It had Siliceous lime at 3,370 feet, total depth 3,385 feet, and made potential of 3,197 bbls. of oil.

Texas Co. No. 13 Bemis A, SE NW NE section 28-11-17w, topped Siliceous lime at 3,393 feet, total depth 3,398 feet, and made potential of 1,638 bbls. of oil.

L. H. Wentz No. 8 Bemis, NW NE NW section 28-11-17w, had Siliceous lime at 3,409-17 feet, total depth, and made potential of 2,646 bbls. of oil.

Cities Service Oil Co. No. 4 Johansen, NW NE NE section 22-11-17w, topped Siliceous lime at 3,401 feet, total depth 3,404 feet, and made potential of 1,856 bbls. of oil.

Same company's No. 5 Johansen, SE NW NE section 22-11-17w, made potential of 1,861 bbls. of oil from Siliceous lime found at 3,451 feet, total depth 3,459 feet.

Shell Petroleum Corp. No. 1 Madden, NE NE SE section 29-11-17w, had Siliceous lime at 3,495 feet, total depth 3,543 feet, was acidized, pumped 17 bbls. of oil in one hour, reacidized, pumped 42 bbls. of oil in one hour and made potential of 843 bbls.

Champlin Refining Co. No. 2 Meier A, SE NE SW section 36-11-18w, Marshall area, topped Siliceous lime at 3,567 feet, total depth 3,575 feet, and made potential of 1,150 bbls. of oil.

Operations reported in Ellis County for the first time: Republic Natural Gas Co. No. 1 Joy, NE NE NW section 14-12-18w, location; Champlin Refining Co. No. 3 Meier A, SW NE SW section 36-11-18w, location; Cities Service Oil Co. No. 6 Johansen, SW NE NE section 22-11-17w, location; Republic Natural Gas Co. No. 6 Romine, SW NE NW section 18-11-16w, moving in material.

Harvey County

Palmer Oil Co. and others No. 2 Schrag, NE NE NW section 31-23-3w, Burrton field, Harvey County, topped Chat at 3,265 feet, was bottomed at 3,358 feet, acidized and made potential of 764 bbls. of oil.

Carl Hipple and others No. 3 Morris, SE SW SW section 30-23-3w, found Chat at 3,283 feet, total depth 3,369 feet, acidized and made potential of 470 bbls. of oil.

Claude Drilling Co. and others No. 1 Dick, SW SW NE section 19-23-3w, found Chat at 3,256 feet, pay at 3,357-62 feet, total depth, flowed 15 bbls. of oil in two hours, was acidized and made potential of 240 bbls. of oil.

Greenwood County

Three small producers and three failures were completed in Greenwood County. C. C. Whittiker and others No. 3-K Davis, Severy area, topped Kansas City lime at 1,065 feet, total depth 1,225 feet, was acidized and pumped 18 bbls. of 35-gravity oil daily.

Houston-Oklahoma Oil Co. No. 7 Berry, NW NE SW section 28-23-13, topped Mississippi lime at 1,751 feet, had pay at 1,762 feet, total depth 1,786 feet, was shot and pumped 12 bbls. of oil daily.

Kansas City Production Co. No. 1-A Pinon, NW SW NE section 27-23-13, had Mississippi lime at 1,780-1,810 feet, total depth, was acidized and pumped 12 bbls. of oil and 10 bbls. of water daily.

Seven-Eleven Oil Co. No. 3 Evans, SE NW NW section 7-22-10, had a hole full of water at 2,543-45 feet, total depth, and was abandoned.

Ward McGinnis and associates No. 2 Smith-Jobes, SE section 10-24-13, had a hole full of water and was abandoned at 1,660 feet, total depth.

O. F. Duncan No. 5 Schiedler, NE SW SW section 16-23-13, was abandoned with a hole full of water at 1,790 feet, total depth.

Estimated Daily Production

Estimated daily production of Kansas for the week ending October 9 and for the preceding week was as follows:

	Barrels	
	Oct. 9	Oct. 2
Oxford City	1,400	1,350
Burrton	14,200	14,025
Ritz-Canton	4,850	4,900
Graber	2,825	2,325
Hollow-Nikkel	2,625	2,575
Lerado	2,300	2,000
Voshell	2,450	2,400
Wellington	3,225	3,250
Ellsworth County:		
Lorraine	3,625	4,075
Other pools	1,490	1,420
Rice-Barton counties:		
Bloomer	3,875	4,425
Chase	6,175	7,350
Geneseo	2,550	2,725
Raymond	1,300	1,275
Silica	13,225	15,350
Keesling	1,025	1,000
Hauschild	1,550	750
Miscellaneous Rice	9,035	8,835
Miscellaneous Barton	5,950	6,440
Russell County:		
Fairport	2,135	2,150
Gorham	2,005	2,080
Russell	1,610	2,775
Sullivan	7,340	8,750
Trapp	13,545	12,425
Miscellaneous Russell	7,620	7,915
Sedgwick County:		
Valley Center	1,070	1,045
Miscellaneous	2,705	2,795
Ellis County:		
Bemis	5,325	5,075
Miscellaneous	2,890	3,500
Kingman County	525	375
Stafford County	2,595	2,655
Greenwood County	9,950	9,900
Butler County	16,120	15,000
Other fields	21,090	21,590
Total Kansas	180,200	184,500

Woodson County

Woodson County Pipe Line Co. No. 9 Winterscheid, SW SW SE section 6-24-14, Woodson County, topped Mississippi lime at 1,685 feet, had pay at 1,705-18 feet, total depth, was acidized and pumped 8 bbls. of oil and 1 bbl. of water daily.

Saco Oil Co. No. 6 Klick, NW SW SW section 20-25-14, was dry and abandoned at 1,450 feet, total depth.

Babcock and others No. 1 Weidle, NW NE SE section 2-24-14, was dry and abandoned at 1,637 feet, total depth.

Butler County

Saco Oil Co. No. 1-A Powers, NE SE NW section 34-28-6, Butler County, topped Mississippi lime at 2,850 feet and was abandoned at 2,872 feet, total depth, with a hole full of water.

New work in Butler County: Trees Oil Co. No. 1 Sutter Estate, NE NE NW section 12-28-6, moving in material; Polhamus No. 1 Leon Bank, SE cor. section 32-27-7, drilling at 640 feet; Richmond Drilling Co. No. 1 Lugriesse, NW NE NW section 25-27-3, spudded; Saco Oil Co. No. 1 Draper A, NW SW SW section 27-25-5, drilling at 450 feet.

Elk County

Denton & Morrow No. 8 Burke, SE SW SW section 34-29-10, Dunkleberger area, Elk County, topped Mississippi lime at 2,031 feet, total depth 2,105 feet, and was dry and abandoned.

Chautauqua County

Sinclair Prairie Oil Co. No. 50 Casement, SE NW SE section 32-33-11, Chautauqua County, had Mississippi lime at 1,768 feet, total depth 1,866 feet, and pumped 10 bbls. of oil daily.

Rush County

Morgan & Flynn and associates No. 2 Crowell, SE SE NE section 23-18-16w, Otis-Albert district, Rush County, had LaMotte sand at 3,520 feet, total depth 3,554 feet, flowed 258 bbls. of oil in 4½ hours, and on potential test flowed 417 bbls. of oil the first four hours and 367 bbls. the next four hours, making potential of 2,205 bbls. of oil, with 50,000,000 feet of gas.

Schermerhorn Oil Co. No. 3 Schroeder, SW SE SE NE section 36-18-16w, was a location. Carter Oil Co. and others No. 1 Pascoe, NW cor. section 36-18-16w, was building rig. Morgan & Flynn No. 4 Koriel A, SE SE NW section 23-18-16w, set 15-inch casing at 219 feet.

Ellsworth County

Continental Oil Co. and others No. 6 Rolfs, NW SE NW section 34-17-8w, Ellsworth County, had Siliceous lime at 3,201 feet, total depth 3,240 feet, was acidized, pumped 218 bbls. of oil the first four hours and made potential of 1,309 bbls.

Skelly Oil Co. No. 1 Moran, SE cor. section 31-17-10w, was a rig. Yoches No. 3 Patzner, SE SE NW section 30-17-10w, was building rig.

McPherson County

W. R. McCluskey No. 1 Blair, NW SW NW section 32-19-1w, McPherson County, topped Chat at 2,940 feet, had a hole full of water and was abandoned at 3,018 feet, total depth.

Continental Oil Co. and others No. 2 Buchner, NW NE SE section 29-21-1w, was a location. Gulf Oil Corp. No. 4 Stuckey, NW SE NE section 33-20-3w, was a rig.

Reno County

Cities Service Oil Co. No. 2 Fluke, NE NE SW section 15-26-9w, Lerado field, Reno County, found Viola lime at 4,143 feet, was bottomed at 4,144 feet, acidized, flowed 417 bbls. of oil the first four hours, 438 bbls. the next four hours and made potential of 2,506 bbls. of oil, with 10 per cent water.

Stafford County

Stanolind Oil & Gas Co. No. 9 Komarek, SE NE SE section 30-22-11w, Richardson pool, Stafford County, had Siliceous lime at 3,522 feet, total depth 3,553 feet, and made potential of 1,275 bbls. of oil.

New work in Stafford County: Kessler Oil & Gas Co. No. 1 Pinkston, NE NE NW section 17-22-14w, rig; Fred Rust and others No. 1 Drach, NE NE SW section 12-22-13w, wildcat, rigging up rotary; Torry & Feaster No. 1 Allen, NW NW SE section 34-22-12w, spudded.

Rooks County

Leavell Coal Co. No. 3 Baxa, C S half S half NW section 12-9-17w, Rooks County, topped Kansas City lime at 3,155 feet, had pay at 3,168 feet, total depth 3,240 feet, acidized and made potential of 882 bbls. of oil.

Colonial Oil Co. and others No. 1 Faubin, SE SE SW section 7-6-18w, was a cellar. Superior Oil Co. and others No. 1 Casey, SE cor. section 35-10-19w, wildcat, was rigging up rotary.

Barber County

Barbara Oil Co. No. 1 Thompson, C SW SW section 22-33-13w, Medicine Lodge area, Barber County, had Chat pay at 4,498-4,600 feet, total depth, and produced 40,000,000 feet of gas.

Scott County

Atlantic Refining Co. No. 2 Dague, C SE NW section 14-20-33w, Shallow Water pool, Scott County, was acidized, made potential of 1,149 bbls. of oil and was completed in lime at 4,673-44 feet, total depth.

Stevens County

Benedum & Trees Oil Co. No. 1 Ferguson, C NE section 5-35-38w, Hugoton area, Stevens County, produced 3,000,000 feet of gas and was completed as 2,840 feet, total depth.

New activity in Stevens County: United Production Co. No. 1 Mitchell, C NW section 2-35-38w, rigging up rotary; same company's No. 1 Beardsley, C N half section 12-31-35w, wildcat, moving in tools; Panhandle Eastern Pipe Line Co. No. 1 Parsons, C NW section 3-31-37w, rigging up rotary.

Grant County

Columbian Fuel Co. No. 1 Bass, C SE section 7-29-36w, Grant County, was bottomed at 2,723 feet and produced 12,000,000 feet of gas, completed.

United Production Co. No. 1 Hickman, C S half section 23-30-35w, was an abandoned location.

New operations in Grant County: United Production Co. No. 1 Christian, C SW section 16-30-36w, moving in material; R. K. Wilson No. 1-22 Holmley, C SE section 22-28-37w, wildcat, location; same operator's No. 1-20 Bank, C NE section 20-28-37, wildcat, drilling at 1,670 feet.

Additional New Work

In Clark County, Olson Oil Co. and associates No. 1

Watkins, SW SW NW section 23-32-21w, wildcat, had spudded, and same operator's No. 1 Lehman, SE SE SW section 20-32-21w, wildcat, was rigging up rotary.

In Cowley County, Lloyd, Frost & Study No. 1-K Elder, NW NW NE section 4-32-3e, was a location.

In Ford County, Olson Oil Co. and others No. 1 Fowler, C SW section 26-27-22w, was moving in rotary tools for a wildcat.

In Pratt County, Colonial Oil Co. and associates No. 1 Phelps, SE SE SW section 4-26-12w, wildcat, was a location.

In Sumner County, Sinclair Prairie Oil Co. No. 4 Herrick, NE SW SE section 15-35-2e, was a rig. Stelbar Oil Corp. and 4 Barlow, NE SW NE section 33-31-1w, had spudded.

Louisiana-Arkansas Fields

(Continued from Page 86)

cor. SE SW section 4-20-15, Pine Island area, pumped 60 bbls. on completion test, total depth 2,194 feet.

Magnolia Petroleum Co. No. 26 S. J. Robertshaw, section 23-21-15, pumped 70 bbls. in 13 hours after acid treatment, total depth 1,650 feet.

Stanolind Oil & Gas Co. No. 127 Dillon heirs, NW cor. NE section 14-21-15, pumped 18 bbls. daily on completion test after acid treatment, total depth 1,665 feet.

Bienville Parish

McDowell and others No. 1 Locke, NE cor. section 9-15-10, was abandoned at 2,960 feet.

De Soto Parish

Pullman Oil Co. No. 2 Ramsey, NE cor. SE NW section 36-11-11, tested salt water and abandoned, total depth 3,060 feet.

Sabine Parish

Producers Oil & Gas Co. No. 4 Edwards, SW cor. NW SW section 29-9-13, pumped 10 bbls. daily on completion test, total depth 2,086 feet.

Union Parish

Interstate Natural Gas Co. No. 74 fee, NE cor. section 19-21-4e, gauged 11,000,000 feet of gas, total depth 2,150 feet.

ARKANSAS

A. M. Neely No. 1 Meek, NE cor. NE NW section 35-19-25, Lafayette County, Arkansas, was dry and abandoned at a total depth of 3,346 feet.

Benedum & Trees Oil Co. No. 10 Groves, SE cor. NE NW section 10-14-20, Nevada County, pumped 225 bbls. daily on completion test, total depth 2,156 feet.

Arkansas Southern Oil Co. No. 1 G. G. Simmons, NW cor. NW NE section 15-18-13, Union County, pumped 8 bbls. daily on initial test, total depth 2,281 feet.

On a 24-hour gauge of E. M. Jones and others No. 1 Marine Oil Co., section 17-18-17, Schuler field, Union County, showed 1,590 bbls. net oil through a one-half inch tubing choke, in addition to 20 per cent salt water. Lion Oil Refining Co. No. 1-A Edna Morgan, SW cor. SW section 18-18-17, was coring at 7,568 feet. A section of this core showed a stain and odor of oil.

Eastern Fields

(Continued from Page 82)

through the Cow Run sand to 626 feet and it is also being abandoned. Both were in Union district.

In Roane County, L. C. Young on the P. E. Beard farm in Harper district, drilled through the Salt sand to 1,678 feet. The sand was topped at 1,675 feet with 1 bbl. of oil a day after shot. It will be abandoned.

In Wayne County, the Chartiers Oil Co. completed a second test on the Oliver Viers farm in Butler district in the shales at 3,809 feet. It is a gas well gauging 250,000 feet a day.

In Wood County, the Bull Creek Oil Co. drilled a test on the Rudolph McKibben farm in Union district through the Cow Run sand to 1,100 feet and it was dry and abandoned.

Oriskany Gas Field

The feature well in West Virginia for the week was the test of Godfrey L. Cabot, Inc., on the J. C. Fisher and others lease in Poca district. It was completed at a depth of 4,881 feet and gauged 20,100,000 feet a day. It is located just north of the South Penn Oil Co.'s gas well of the same size on the T. H. Newhouse farm east of Sissonville.

In Elk district, there were two gas wells and one dry hole. The United Fuel Gas Co. is completing No. 4688, W. C. McKee, guardian, in Oriskany sand which was topped at 5,140 feet and at 5,172 feet it was showing a gauge of 785,000 feet a day. Benedum & Trees, Inc., completed a test on the Cora Baxter farm at a depth of 4,942 feet, the Oriskany, and it gauges only 507,000 feet a day. In this district, Columbian Carbon Co. drilled to 4,958 feet on the Marion and Patrick farm, through Oriskany sand which was topped at 4,882 feet. It produced 90,000 feet a day and is considered a failure.

Nine new locations were made in the Coopers Creek field. In Poca district, the Pitman Gas Co. made a location, the most northern in the field, on the Albert Moore farm, 3 miles northeast of the T. H. Newhouse farm and 2½ miles north of the Grapevine group of wells. Two miles northeast of the Newhouse farm, Hays Oil & Gas Co. made a location on the H. L. Evans farm. Linden Drilling Co. made a location on the John B. Kidd farm 1¾ miles north of the T. H. Newhouse farm.

Across the Pocatalico River from the gas well on the J. T. Bonham farm, United Fuel Gas Co. made a location on the A. A. and William Beane farm. One-half mile east of the Bonham farm, this company made a location on the Leah K. Johnson and others lease. One-quarter mile northeast of the Bonham farm, the company made a location on the Virgil Tate farm.

In Elk district, the Columbian Carbon Co. made a location on the B. F. Jones farm, a location south of its James R. Jones gas well, and Pond Fork Oil & Gas Co. topped the Corniferous lime at 5,026 feet in the test on the Crowder and Thomas lease.

In Union district, West Virginia Gas Corp. and Guy B. Ray made a location on the R. W. St. Clair and others lease one-half mile east by south of the Sarah Ann Null gas well. The Mullins Gas Co. is drilling at 3,600 feet on the Sarah S. Dawley farm. In Poca district, this company topped the Corniferous lime at 4,858 feet in the test on the Campbell and Odell lease.

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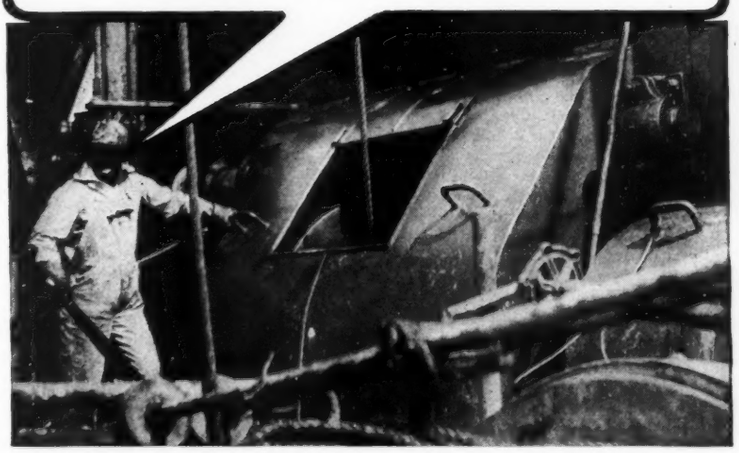

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East and East Central Texas

By
L. E. BREDBERG

FIVE MORE WILDCATS PROVE DRY IN EAST CENTRAL AREA

DALLAS, Tex., Oct. 11.—The second tri-unit test of Tide Water Associated Oil Co., Seaboard Oil Corp. and Humble Oil & Refining Co. on their block near Opelika in the northeastern part of Henderson County, is now marking time at 9,320 feet, with a 5-foot core from 9,315 feet to total depth showing 4 feet and 8 inches of sandy shale and lime. It is still in the Travis Peak. The operators may decide to plug back and test slight upper showings.

Another test, which appears disappointing, is that of the Pure Oil Co. on the Kendrick farm, in the P. Varella Survey, in the old faulted field at Mexia in Limestone County. It topped the Travis Peak series at 5,656 feet, and drilled through it. It is now below 8,015 feet. Elevation is 337 feet.

New Test

E. B. LaRue and others are planning a Woodbine sand test on the Breedlove farm, in the James Dunn Survey, on the north side of the LaRue dome in eastern Henderson County. The 200-acre tract on which the location has been made was farmed out by the Sun Oil Co., which retained a half interest in the tract. There is a deep test now drilling in this area, American Liberty Oil Co. and LaRue putting same down on the LaRue and Johnson farm in the P. Jackson Survey. Elevation is 464 feet, and it is drilling below 7,000 feet. It is seeking Trinity production found in Tide Water and others No. 1 McElreath and Suggett near Opelika, about 10 miles to the north. Contract depth of this test is 7,500 feet, and the test has been reported as running exceptionally low on structural formations.

Nowlin and others are rigging up for a test on the Easterling lands in the J. Mayor Survey, 2 miles south of Chatfield, in the northeastern part of Navarro County. This location is about 8 miles west of Sherman Hunt's No. 1 Dillard, which is drilling at 4,100 feet. The Dillard test is located in the H. Jeffries Survey, in the northwestern corner of Henderson County. It topped the Georgetown lime at 4,080 feet, with an elevation of 361 feet.

Grapeland Test

The American Liberty Oil Co. No. 2 Bean, an outpost one-half mile east of gas-distillate production 2 miles northwest of Grapeland in the northeastern part of Houston County, has been showing possibilities as an oil producer during the week, and is now shut in for storage at a total depth of 6,087 feet. It had been shut in for several days and when opened it made from 5 to 6 bbls. of fluid per hour, of which 25 per cent was reported as water. The oil tested 48 gravity. Production is coming from the Woodbine sand at 6,071-73 feet. Total depth of the hole is 6,079 feet.

If this test makes an oil well it will be the first in the field, in which two gas-distillate wells have been producing for the past several months. High gas volume in this test may gradually make a gas-distillate producer out of it, also, although about 6 miles to the northeast the Hunt Oil Corp. drilled a test which first showed for a gas-distillate well, then changed to an oil producer. It is on the Percilla structure on which the Shell Petroleum Corp. has a large block and will eventually make several tests.

Elevation of the Bean well is 515 feet and the Woodbine series was topped at 6,069 feet, which is lower on structure than the discovery.

Abandonments

Five wildcats were abandoned in the East Central Texas district this week, one of which only went to 20 feet. This test, Glenn and others, on the E. Core lands, 3 miles north of Edom, in Van Zandt County, merely spudded. The other abandonment in that county was by P. E. Hill on the Chitty lands, in the M. Neal Survey, 12 miles south of Canton. It was plugged at 2,180 feet, with an elevation of 512 feet.

The Stewart Drilling Co. gave up No. 1 N. Young, in the S. H. Hitchcock Survey, 1 mile west of Randolph, in Fannin County, at a total depth of 3,710 feet. Elevation is 666 feet.

E. R. Cosby abandoned the southern Red River County test which was started by Manning and others and later taken over by Dale Sneed, then by Cosby. It topped the Paluxy at 3,770 feet and was given up at a total depth of 4,016 feet. Elevation 297 feet. Its location is on the Hocker and Hughes lands, about 9 miles northeast of the Talco field.

Wildcatting in this district continues to dwindle as several tests are abandoned nearly every week, with but few locations being made to displace them on the drilling reports. But little incentive is being left to operators to drill wildcats in the district.

EAST CENTRAL TEXAS COMPLETIONS

Fannin County

Stewart Drilling Co. No. 1 R. Young, dry and abandoned 3,710 feet, elevation 666 feet.

Franklin County

Humble Oil & Refining Co. No. 5 Wimms, 4,166-4,309 feet, 267 bbls. on pump. O'Neal & Rotundi No. 1 Bolin, 4,246-94 feet, 15 bbls. per hour on pump.

Henderson County

Cartex Oil Co. No. 5 Horton, 4,077-97 feet, 180 bbls. through one-eighth inch choke. S. B. Howard No. 3 Barton, 4,079 feet, 117 bbls. through one-eighth inch choke.

Hopkins County

Goldston and others No. 6 Smith, 4,480-4,522 feet, 169 bbls. through one-quarter inch choke.

Kaufman County

Scott and others No. 1 Temple and Nash, dry and abandoned 3,250 feet, 1 mile east of Scurry.

Red River County

E. R. Cosby No. 1 Hocker and Hughes, dry and abandoned 4,016 feet, elevation 297 feet.

Van Zandt County

Glenn and others No. 1 E. Core, abandoned 20 feet, 3 miles north of Edom. P. E. Hill No. 1 Chitty, dry and abandoned 2,180 feet, elevation 512 feet, 7 miles southwest of Canton.

Titus County

B. G. Byars No. 1-B Belcher, 4,298 feet, 307 bbls. on pump. Humble Oil & Refining Co. No. 10 Blackman, 4,209-4,323 feet, 346 bbls. on pump; No. 4 M. Galt, 4,207-4,315 feet, 63 bbls. in eight hours on pump. Lucey Petroleum Co. No. 8 Williams, 4,232-95 feet, 15 bbls. per hour on pump. Tide Water Associated No. 10 Wilson, 4,212-80 feet, 319 bbls. on pump.

EAST TEXAS COMPLETIONS

Gregg County

Amerada Petroleum Corp. No. 17 Continental State Bank, 3,554-96 feet, 57 bbls. per hour; No. 16 Killingsworth, 3,525-55 feet, 80 bbls. per hour. Arkansas Fuel Oil Co. No. 18-C Lathrop, 3,587-3,612 feet, 11 bbls. in 15 minutes. Atlantic Refining Co. No. 84-A Judge, 3,501-3,635 feet, 65 bbls. per hour; No. 80 Moore, 3,521-3,639 feet, 97 bbls. per hour; No. 29 Turner, 3,535-3,707 feet, 108 bbls. per hour. Collin and others No. 14 Fisher, 3,425-38 feet, 15 bbls. in 15 minutes. Deep Rock Oil Co. No. 14 Jones, 3,547-75 feet, 20 bbls. in 15 minutes. Gulf Oil Corp. No. 85 Judge, 3,526-39 feet, 35 bbls. per hour. Humble Oil & Refining Co. No. 30 Armstrong, 3,593-3,645 feet, 54 bbls. per hour; No. 31 Armstrong, 3,580-3,610 feet, 60 bbls. per hour. Stanolind Oil & Gas Co. No. 12 Smith, 3,517-57 feet, 48 bbls. per hour. Sun Oil Co. No. 6 Sparks, 3,621-73 feet, 48 bbls. per hour. Texas Co. No. 25 Lee, 3,547-3,550 feet, 60 bbls. per hour. Arcadia Refining Co. No. 1 Williams, 3,761-62 feet, 20 bbls. in four hours on pump. Danciger Oil & Refining Co. No. 6 McNeely, 3,596-97 feet, 25 bbls. in 30 minutes. Gulf Oil Corp. No. 97 Hilburn, 3,546-62 feet, 36 bbls. per hour. McCulloch and others No. 1-A Elder, 3,521-3,617 feet, 20 bbls. in four hours on pump. Magnolia Petroleum Co. No. 6 Andrews, 3,595-3,605 feet, 18 bbls. in 15 minutes; No. 6 Sheppard, 3,569-73 feet, 45 bbls. per hour. Murko Oil & Refining Co. No. 6 Hale, 3,462-98 feet, 40 bbls. in six hours on pump. Overton Refining Co. No. 2 Protho, 3,539-40 feet, 200 bbls. in three hours. A. O. and L. B. Phillips No. 2 Walker, 3,566-74 feet, 35 bbls. per hour. Potter Brothers No. 1 Dillard, 3,535-54 feet, 70 bbls. in two hours on swab. J. W. Russell No. 6 Lacey, 3,454-64 feet, 30 bbls. per hour. Stanolind Oil & Gas Co. No. 8 Clayton, 3,507-65 feet, 67 bbls. per hour. Sun Oil Co. No. 52 Cole, 3,520-75 feet, 51 bbls. per hour; No. 13 Smith, 3,623-59 feet, 47 bbls. per hour.

Rusk County

Atlantic Refining Co. No. 23 Brightwell, 3,636-3,768 feet, 60 bbls. per hour. Houston Oil Co. No. 8 Brightwell, 3,641-54 feet, 20 bbls. in 17 minutes. Magnolia Petroleum Co. No. 3 Mayfield, dry and abandoned. Tide Water Associated Oil Co. No. 20-A Bean, 3,547-94 feet, 23 bbls. per hour; No. 10 Jernigan, 3,647-55 feet, 20 bbls. in 15 minutes. Atlantic Refining Co. No. 4 Fox, 3,622-3,716 feet, 32 bbls. per hour. Blackwell Oil & Gas Co. No. 9 Stone, 3,622-94 feet, 40 bbls. in 50 minutes. Great Plains Oil Co. No. 6-A Stone, 3,640-65 feet, 45 bbls. in 35 minutes. Major Oil Co. No. 2 Presbyterian Church, 3,759-68 feet, 60 bbls. in 30 minutes. Humble Oil & Refining Co. No. 58 Blackwell, 3,634-35 feet, 20 bbls. in 20 minutes; No. 19 Piercy, 3,762-64 feet, 90 bbls. per hour; No. 55 Price, 3,739-91 feet, 60 bbls. per hour; No. 21-A Silvey, 3,694-95 feet, 75 bbls. per hour; No. 7-B Silvey, 3,686-88 feet, 65 bbls. per hour; No. 57-A Silvey, 3,654-3,728 feet, 70 bbls. per hour. Hunt Production Co. No. 8 Plowman, 3,758-76 feet, 23 bbls. in 14 minutes. Ohio Oil Co. No. 12 Lundsford, 3,631-3,713 feet, 15 bbls. in 15 minutes. Sinclair Prairie Oil Co. No. 23-B Mayfield, 3,615-20 feet, 22 bbls. in 30 minutes. Tex-Jersey Oil Co. No. 10-A Keeling, 3,762-72 feet, 35 bbls. in 30 minutes. Ward Oil Co. No. 16 Finney, junked and abandoned 3,560 feet.

Smith County

Sun Oil Co. No. 2 Pace, 3,747-49 feet, dry and abandoned. Texas Gulf Petroleum Co. No. 22 Hodnett-Melton, 3,682-83 feet, 20 bbls. in 20 minutes.

Upshur County

Magnolia Petroleum Co. No. 18 Hampton, 3,615-35 feet, 15 bbls. in 15 minutes. Petroleum Corp. of Venezuela No. 16 Walker, 3,632-40 feet, 30 bbls. in 30 minutes. P. H. Pewitt No. 6 Williford, 3,694-95 feet, 25 bbls. in 50 minutes; No. 15 Williford, 3,655-56 feet, 30 bbls. per hour. W. L. Pickens No. 10 Wells, 3,711-13 feet, 35 bbls. in 20 minutes; No. 12 Wells, 3,716-18 feet, 28 bbls. in 45 minutes. Rancho Oil Co. No. 18 Edwards, 3,604-25 feet, 80 bbls. per hour. Texas-Canadian Oil Co. No. 17-B Victory, 3,660-72 feet, 70 bbls. per hour.

HOCKLEY, COCHRAN COUNTY TESTS APPEAR DISCOURAGING

By L. E. BREDBERG

FORT WORTH, Tex., Oct. 11.—The greater part of the news coming from the West Texas district carried disappointment this week, although several areas had outpost tests showing for producers and consequent extensions, with only a couple of semiwildcat new locations being reported. Not one extreme wildcat location was reported during the seven-day period.

Two important wildcats in the northern tier of counties, Cochran and Hockley, appear to be failures. The Texas Co. No. 1 Slaughter, in League 130, Carson County School lands, logged sulfur water at 4,908 feet, was drilled to a total depth of 4,960 feet, and is now plugging back to 4,880 feet to shoot a showing in upper saturation. This test is about 10 miles northwest of the Duggan field, first producing area in Cochran County, and about 6 miles northwest of Wiggins and others' well which has been placed on pump.

The failure in Hockley County, drilled by Frank Bates and the Phillips Petroleum Co., is near the center of the south line of the county, and about 10 miles east of the county's only producing area, in section 5, Block 1, P.S.L. Survey. Three hundred and fifty feet of sulfur water was uncovered at total depth of 5,260 feet, and it is being abandoned at that depth.

An abandonment in Yoakum County was the test of Moore Brothers on the Cleveland lands, in section 706, Block D, John H. Gibson Survey. Total depth is 5,506 feet, and elevation is 3,624 feet. It is 3¾ miles southwest of the Bohago and Bond discovery well, and apparently west of the producing trend from the Wasson field in northwestern Gaines, up through the Denver discovery to the Bohago discovery.

An outpost test in the Seminole pool in northern Gaines County appears as an edge well, or possibly a dry hole, defining this pool on the west since it is showing about 90 per cent sulfur water while swabbing from a total depth of 5,073 feet. This is the Ohio Oil Co. No. 1 Averitt, in section 228, Block G, W.T.R.R. Survey, and is one-half mile west of production in that area which has yet to prove itself as a pool of any importance. Previous wells were small in comparison to the average West Texas well, and dry holes puncture the surrounding area.

Noodle Creek Extension

The Noodle Creek field in western Jones County, which has been producing for 11 years, has registered a half-mile extension since the completion of W. McKemie No. 1 W. W. Toombs in the SW quarter of section 52, Block 18, T.&P. Survey. It pumped 20 bbls. per hour on a Railroad Commission test from the Noodle Creek lime pay at 2,471-76 feet, after acidizing with 3,000 gallons. It calls for two offsets which are to be drilled at once, and in case those two tests also prove producers this end of the field, the northeast, will no doubt see other rigs moved in to test acreage previously considered out of the producing area.

The Wasson area, recently opened in the northern part of Gaines County, is to receive an interesting test by the Shell Petroleum Corp. Location has been made for a 2-mile eastern outpost test to the field, in section 344, Block G. The Humble Oil & Refining Co. is another major company that is moving in on location for a test in this field, which will soon get a pipe line outlet by way of Hobbs, N. Mex., field, by a line of the Humble Pipe Line Co.

Possible Extensions

The Goldsmith field in western Ector County appears due for another extension, on the west side, by Rogers & Rogers No. 1-B Texas Pacific Land Trust, in section 1, Block 45, Township 1s, T.&P. Survey. It was drilled to 4,289 feet and pipe set preparatory to testing saturated lime logged from 4,248 feet to the total depth.

The recently opened Bohago area in south central Yoakum County also appears likely to be extended within a week or two as the Standard Oil Co. of Texas No. 1 M. B. Sawyer, located in section 576, Block D, John H. Gibson Survey, three-quarters of a mile northwest of the discovery well in this pool, logged saturation from 5,215-35 feet. Bottom of the hole is 5,264 feet, where a fishing job has held up progress on testing of the outpost.

Rotan Field

Attention the fore part of the week will be held by the Rotan field's southern outpost test of the British American Oil Co. on the N. A. White farm, in section 123, which has been standing shut down at 3,568 feet waiting for cement to set preparatory to drilling in and testing. It is one-half mile south of the nearest producer in the field and if proven a producer will widen out this pool to 1 mile from north to south.

McCamey Outpost

Four miles southwest of the McCamey field in Upton County, J. W. Ellis of San Angelo, and associates, have spudded a test on lands of C. W. Hobbs in section 55, Block 35, H.&T.C. Survey, for a Permian lime test. Two dry holes, one past 3,000 feet and one past 3,400 feet, have been drilled on acreage between the new test and the field, but prior to acidization of the Permian lime, which has proven highly successful in the McCamey area. Consequently those two dry holes cannot now be considered as condemning the locality, as acid has often made oil wells out of tests which would have been abandoned without its use.

Panhandle District

The Wilcox Oil & Gas Co. has staked location on the W. F. Ross ranch, in section 23, R. B. Masterson Survey, for a 4,000-foot wildcat test in King County, the first test to be drilled in this county in several years.

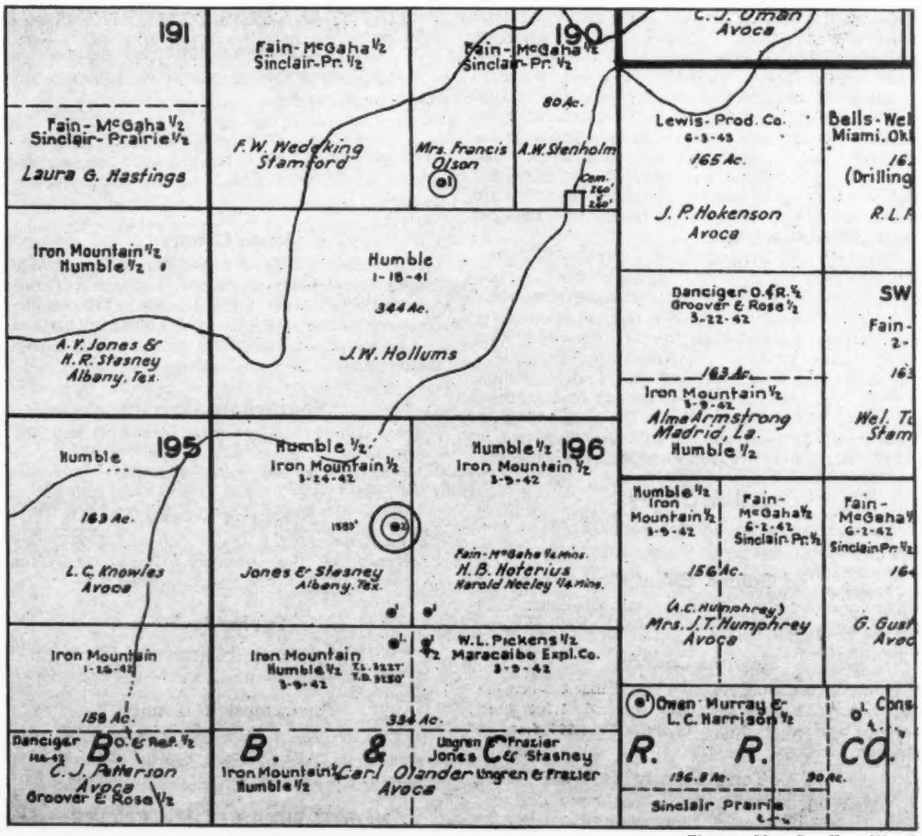
Another wildcat for the district is that of the Murphy Drilling Co. on location not yet announced, about 15 miles due east of Dalhart in the southeastern part of Dallam County. A block was assembled in that area several months ago on lands of Latham and Albright. The test is scheduled to go to 4,000 feet.

Extension

Smith Brothers have an extension producer in their No. 1 Umphres, located in the Hedgecoke Survey, northwest of the Stinnett field in Hutchinson County, extended production about one-half mile after topping the pay at 3,105 feet and drilling to 3,106 feet to test. It made 12 bbls. per hour with 3,000,000 feet of gas on test. It may be carried deeper before completing.

Another Wildcat

Ray W. Staniforth of Dallas, has assembled a block



Zingery Map Co., Fort Worth

The Avoca field in northeastern Jones County was extended by Iron Mountain Oil Co.'s test in section 196. The main producing formation in the field is in the Canyon series of the Palo Pinto lime, below 3,200 feet. The new Iron Mountain well found pay at 1,583-87 feet total depth, which was acidized, the well responding with an initial production estimated at 1,000 bbls. The well circled in section 172 was a dry hole

of 16,000 acres in the southeastern part of Childress County, and it is reported that a 4,000-foot test will be drilled on it. The block adoins the town of Kirkland on the north. Watchorn Oil Co.'s test, about 1 mile to the southeast of the town, showed for a discovery several years ago, later proving noncommercial in production. However, it made sufficient oil to start a spirited leasing and royalty buying campaign in the surrounding territory, which extended over into the adjacent counties, resulting in a second test a few miles to the southeast, which also proved a dry hole. The Watchorn test went to 8,223 feet.

North Texas

A new wildcat test scheduled for Grayson County is to be put down by the Pearson Tubing Co. on lands of J. H. Thompson, in the W. A. Warner Survey. This location is about 5 miles north and 1 mile east of Southmayd, just southeast of Hagerman in the northwestern part of the county. This is also about 8 miles west of the Denver Producing & Refining Co.'s discovery on the Cannon Estate lands in the Elizabeth Barnes Survey, 2½ miles northwest of Whitesboro. This test made a wildcat discovery good for 37 bbls. of oil and 100 bbls. of salt water per day topped at 2,388 feet but the company is carrying it deeper. It is now down near the 4,400-foot mark. The Pearson test is to be drilled to 4,000 feet, and a block of 6,000 acres is held in the area by his company.

WEST TEXAS COMPLETIONS

Crane County

American Liberty Oil Co. No. 5 Tubbs, 4,435 feet, plugged back to 4,388 feet, dry and abandoned. E. E. Fogelson No. 1-D University, 3,220-3,588 feet, 277 bbls. through three-fourths inch tubing. Gulf Oil Corp. No. 11 Tubbs, 4,417-20 feet, 2,106 bbls., acidized; No. 19 Waddell, 3,273-3,502 feet, acidized, 6,360 bbls. The Texas Co. No. 1-D University, 3,525-38 feet, 11,576 bbls.

Ector County

Atlantic Refining Co. No. 7-A Rumsey, 4,180-4,274 feet, acidized and shot, 275 bbls.; No. 1 Slator, 4,170-4,291 feet, shot and acidized, 600 bbls. W. H. Dunning, Jr., No. 8-A Scharbauer, 4,170-4,225 feet, 1,922 bbls., acidized. E. E. Fogelson No. 1-B University, 3,225-3,592 feet, acidized, 709 bbls. through three-fourths inch choke. Fuhrman and others No. 1 E. Cowden, dry and abandoned 4,430 feet, elevation 3,024 feet. General Crude Oil Co. No. 3 Cummins, 4,155-4,275 feet, shot, 518 bbls. through half-inch choke. Gulf Oil Corp. No. 38 Goldsmith, 4,155-4,205 feet, shot and acidized, 812 bbls.; No. 40 Goldsmith, 4,165-4,225 feet, acidized, 2,204 bbls.; No. 41 Goldsmith, 4,165-4,210 feet, acidized, 1,356 bbls.; No. 43 Goldsmith, 4,170-4,235 feet, acidized, 4,476 bbls.

Humble Oil & Refining Co. No. 2-B Cowden, 4,175-4,225 feet, acidized, 166 bbls. Landreth Oil Corp. No. 7-D Scharbauer, 4,180-4,240 feet, acidized, 1,292 bbls.; No. 6-1 Scharbauer, 4,164-4,205 feet, acidized, 1,513 bbls. Mabee & Blackstock No. 1 E. Cowden, 4,324 feet, acidized, 777 bbls. Ohio Oil Co. No. 1 Cummins, 4,180-4,220 feet, shot and acidized, 47 bbls. Phillips & Pure No. 14 C. Cowden, 4,075-4,165 feet, acidized, 4,213 bbls. Schermerhorn No. 4 Johnson, 4,055-4,185 feet, shot, 520 bbls. Shell Petroleum Corp. No. 2 Huddleston, 3,095-3,114 feet, acidized, 275 bbls.

Fisher County

Montour Production Co. No. 1 Smith, 3,554-61 feet, 1,000 bbls.

Gaines County

Amerada Petroleum Corp. No. 1 Armstrong, 5,079 feet, plugged back to 5,043 feet, dry and abandoned.

Howard County

Ennisbrook Oil Co. No. 15 Texas Land & Mortgage Co., 2,630-2,847 feet, shot and acidized, 1,390 bbls. Jameson and others No. 4 Chalk, 1,520-1,600 feet, 18 bbls. on pump.

Terry County

Illinois Oil Co. No. 1 Brownfield, 5,340 feet, dry and abandoned, elevation 3,192 feet.

Pecos County

Cardinal Oil Co. No. 50-E Tippett, 490-535 feet, 11 bbls. on pump. Lee Petroleum Co. No. 17 University, 1,647-56 feet, acidized, 417 bbls. Samwan Oil Co. No. 5 Masterson, 1,310-1,478 feet, shot, 535 bbls. Stanolind Oil & Gas Co. No. 17-A Tippett, 461-477 feet, 34 bbls. oil and 192 bbls. water on pump. Superior Oil Co. of Tulsa No. 2 Phillips Brandenburg, 2,085-2,271 feet, shot, 50 bbls.

Upton County

Basin Oil Properties No. 5-B Baker, 2,298-2,361 feet, acidized, 1,056 bbls. Choate & Hogan No. 1 Burleson, 2,367-2,404 feet, acidized, 941 bbls. Gulf Oil Corp. No. 6 Hughes, 2,129-35 feet, acidized, 81 bbls.; No. 158 McIlroy, 2,705-2,874 feet, shot, 369 bbls.; No. 8 Rogers, 2,213-49 feet, 239 bbls. oil, 5 per cent water on pump, acidized. J. K. Hughes No. 1 Powell, 2,635-56 feet, acidized, 238 bbls. Humble Oil & Refining Co. No. 5-B Ricker, 2,600-90 feet, acidized, 791 bbls., 20 per cent water on pump. Richardson Oils, Inc., No. 2 Harland, 2,075-2,150 feet, acidized, 557 bbls. on pump.

Ward County

Eastland Oil Co. No. 4 Johnson, 2,530-2,930 feet, shot, 604 bbls. Gulf Oil Corp. No. 53 Estes, 2,459-2,680 feet, shot, 1,479 bbls.; No. 87 Hutchins, 2,474-2,735 feet, shot, 1,344 bbls. A. E. Lynch No. 1 Blair, 2,118-2,180 feet, shot, 17 bbls. on pump. Richardson Oils, Inc., No. 3-A Johnson, 2,729-2,922 feet, shot, 397 bbls.

Winkler County

Amon G. Carter No. 13 Walton, 3,290-3,365 feet, shot, 198 bbls. Gulf Oil Corp. No. 16 O. Clapp, 2,815-3,110 feet, shot, 384 bbls.; No. 17 Clapp, 2,816-3,110 feet, shot, 303 bbls.; No. 61 Daugherty, 2,828-3,020 feet, shot, 742 bbls.; No. 62 Daugherty, 2,820-3,020 feet, shot, 1,529 bbls.; No. 63 Daugherty, 2,815-3,020 feet, shot, 1,529 bbls. Humble Oil & Refining Co. No. 9-B Colby, 2,759-3,045 feet, shot, 400 bbls.; No. 19-C Colby, 2,806-3,065 feet, shot, 525 bbls. Magnolia Petroleum Co. No. 14 Colby, 2,896-3,110 feet, shot, 358 bbls. Skelly Oil Co. No. 23 Halley, 2,720-2,925 feet, shot, 411 bbls. Stanolind and others No. 1 Hendricks, 3,030-90 feet, acidized, 743 bbls. through 24/64-inch choke. W. K. Royalty Co. No. 2-C Walton, 3,050-75 feet, 805 bbls.

Yoakum County

Moore Brothers No. 1 Cleveland, dry and abandoned 5,506 feet, elevation 3,624 feet.

CENTRAL TEXAS COMPLETIONS

Brown County

Kewanee Oil & Gas Co. No. 32 R. Hickman, 1,352 feet, dry and abandoned.

Jack County

Beard & Collier No. 4 Bryson, 3,227 feet, dry and abandoned. Big Six Oil Co. No. 2 Fields, 2,920-56 feet, 324 bbls.

Jones County

Brown Eagle Oil Co. & Roberts No. 4 Guitar, sandy lime 1,993-2,004 feet, acidized, 457 bbls. Murray & Harrison and others No. 1 Little & Aikin, 3,515 feet, dry and abandoned. A. G. Swanson No. 1 Manley, 2,010 feet, dry and abandoned. Ungren & Frazier No. 2 Dorsey, "E" lime 2,353-60 feet, acidized, 334 bbls.

Shackelford County

Grady Bailey, trustee, No. 1 Andrews, oil sand 528-34 feet, 10 bbls. Roeser & Pendleton No. 42 Dawson & Conway, oil sand 1,502-06 feet, 31 bbls.

Stephens County

Cox & Caprito No. 1 Donnell, oil sand 2,969-89 feet, 33 bbls. per day. Dean Brothers & Fortex Oil Co. No. 1 Watson, 2,210 feet, dry and abandoned.

Taylor Pool

Louie Davis No. 1 E. Lincicum, oil sand 2,012-13 feet, 31 bbls. per day.

Throckmorton County

R. H. Alexander No. 1 Brown, 1,030 feet, dry and abandoned. G. C. Foster No. 1 Brown, 1,500 feet, dry and abandoned.

NORTH TEXAS COMPLETIONS

Baylor County

Golding & Cochran No. 1 L. Hrncirik, 1,670 feet, dry.

Archer County

Bridwell Oil Co. No. 2 L. F. Wilson F, 1,380-85 feet, 10 bbls. Duncan & Marchman No. 8 Mrs. T. Andrews, 971-85 feet, 40 bbls. K. E. Edmonds and others No. 1 W. J. McMurtry, 815 feet, dry. First National Oil Co. No. 1 F. A. Davison, 900 feet, dry. Shappell Oil Co. No. 5 J. Conner A, 1,100-1,105 feet, 30 bbls.

Clay County

Dennison and others No. 1 S. W. Rice, 400 feet, dry.

Cooke County

Bridwell Oil Co. No. 7 J. R. Parkey, 675-705 feet, 10 bbls. A.D. Robinson No. 10 J. H. Otto A, 811-80 feet, 10 bbls.

Montague County

O. V. Beck No. 13 Davenport, 2,456 feet, dry.

Wichita County

George W. Cooper No. 30 W. T. Waggoner C, 1,619-35 feet, 250 bbls. Deep Oil Development Co. No. 2 Munger F, 3,726-3,885 feet, 550 bbls. Deka Oil Co. No. 2 Love, 535 feet, dry. King Oil Co. No. 9 Stone A, 1,636-44 feet, 75 bbls. Panhandle Refining Co. No. 18 L. F. Ramming, 900 feet, dry. Perkins & Cullum No. 6 Burnett and others A, 1,502-10 feet, 10 bbls. Petroleum Production Co. No. 76 First National Co., 3,647-3,857 feet, 500 bbls. George Proctor No. 16 Foster & Allen A, 1,524-40 feet, 260 bbls. Ryan Petroleum Co. No. 113 G. L. Nance, 485-500 feet, 8 bbls. Texas Co. No. 437 Waggoner A, 1,967-91 feet, 25 bbls. S. H. Walton No. 4 Will Burnett, 477-84 feet, 12 bbls.; No. 5 Will Burnett, 484-95 feet, 6 bbls.

Wilbarger County

Waggoner Refining Co. No. 6 Waggoner B, 3,073-83 feet, 360 bbls.

California Fields

(Continued from Page 84)

offsets will be drilled immediately by Moore on the former property.

In the Capitan field of Santa Barbara County, Shell has completed No. 2-2 Covarrubias pumping 35 bbls. of clean 41.9-gravity oil per day from 2,993 feet. In the Ventura Avenue field Tide Water Associated Oil Co. No. 61 Lloyd was brought in flowing 149 bbls. of 22.4-gravity oil and 826,000 bbls. of natural gas per day from 7,070 feet. Production showed a cut of 30 per cent water and the well is flowing through a 1-inch bean under a casing pressure of 400 pounds. Its No. 62 Lloyd was completed, doing 42 bbls. of 22.5-gravity oil cutting 25 per cent daily from 6,080 feet. This well is flowing through a 32/64-inch bean under a tubing pressure of 50 pounds and a casing pressure of 325 pounds. Same company's No. 125 Lloyd carried down to 7,700 feet but plugged back to 7,374 feet was completed flowing 41 bbls. of wet oil daily indicating possibly that the bottom plug may not be effective.

Los Angeles Basin

One new well and two recompletions were chalked up in the Long Beach field during the current week but the initials of each were rather small. Richfield Oil Corp. completed No. 10 Denni, a new well bottomed at 4,976 feet, but the output, 51 bbls. of 24.8-gravity oil daily, showed a high water cut. This is not surprising, however, as the productive horizons in the Long Beach field are rather badly depleted and wet due to edgewater encroachment. Cal-Re-Drill, Inc. succeeded in completing its well No. 1 in this field pumping 53 bbls. of 24.2-gravity oil daily from 3,533 feet. This well was originally Richfield Oil Corp. No. 7 Delaney abandoned several years ago. Bush & Winslow No. 1 Signal was good for 51 bbls. daily from 3,490 feet after the hole had been plugged back from 4,664 feet. The oil tests 24.8 degrees but shows a water cut of 30 per cent. In the East Coyote field, Bartholomae Oil Corp. completed No. 5 Sterns pumping 32 bbls. daily from 4,624 feet after the hole had been plugged back from 4,708 feet. This well was finished with 513 feet of 6⅝-inch liner including 448 feet of perforated landed at 4,621 feet. Production was still cutting in excess of pipe line requirements at last reports but may clean up and show a corresponding increase in production.

Magnetic Storm

TUCSON, Ariz.—The U. S. Coast and Geodetic Survey reports a magnetic storm began at 5 a.m. October 3 and ended at 8 a.m. October 6, central standard time.

Central West

By STAFF CORRESPONDENT

RICHLAND'S LARGEST WELL COMPLETED BY PURE OIL CO.

MATTOON, Ill., Oct. 9.—Seven wells were completed in the Illinois Basin fields in the past week in review one of which was a dry hole in Clinton County.

In Clay County, Pure Oil Co. completed No. 1 Brissenden, SE NE NE section 8-2n-8e, Clay City field, Clay County. It had St. Genevieve lime at 2,920 feet, and pay at 2,983-84½ feet, 2,986-88 feet and 2,997-3,001½ feet. It was swabbed 11 hours and then flowed 348 bbls. of oil in 24 hours.

Pure Oil Co. No. 2 Chaffin, SW NW SW section 27-3n-8e, had pay at 2,972½-73½ and 2,975-81 feet, and swabbed 416 bbls. through 2½-inch tubing in 24 hours.

Pure Oil Co. No. 10 Poppe, SE NE SE section 28-3n-8e, had St. Genevieve lime at 2,915 feet and pay at 2,976-83 feet. It flowed 360 bbls. in 24 hours.

Wiser Oil Co. No. 6 Smith, SW SW NE section 28-3n-8e, flowed 40 bbls. the first 24 hours from pay at 2,913-30 feet. Gravity of the oil is 39 degrees.

In Richland County the Pure Oil Co. No. 2 Palmer-Taylor, SW SW SE section 5-3n-9e, Noble pool, flowed 2,542 bbls. in 24 hours, through tubing from pay at 2,952-57 feet, and is the largest well in the pool thus far. No. 2 on the same lease was also completed but it started at 442 bbls. a day. It is in NE SE NE section 33 and is producing from 2,956-3,002 feet.

In Clinton County, Adams Oil & Gas Co. No. 1 Yantis, C NW SE section 27-3n-1w, was abandoned at 1,454 feet. It was dry. Cypress sand was penetrated at 1,310-17 feet and Bethel from 1,415 feet to the bottom.

Twenty New Operations

The 20 first reports on new operations greatly outnumbered the wells completed.

In Marion County, Lambert & Evans No. 2 Cahill, NE cor. SW SE SW section 28-4n-1e, was drilling at 1,200 feet; Adams Oil & Gas Co. No. 2 Frayer, CNL NE SW section 21-4n-1e, rigging up rotary; Adams Oil & Gas Co. No. 11 Merryman, NW SW SW section 21-4n-1e, set pipe at 1,403 feet after drilling into saturated Benoist sand at 1,405-07 feet, total depth.

In Jefferson County, Nolem Oil Co. and Benoist No. 1 Kelly, NE NW NE section 25-4s-2e, have rig up for a cable tool test.

In Hamilton County, J. Garfield Buel and others have rig up for No. 1 Dickey, SE SE NW section 22-2s-7e.

In Clay County, Gordon Oil Co. No. 3 Federal Land Bank, NW NE SE section 8-2n-8e, is a rig on the ground; Pure Oil Co. No. 2 Brissenden, SW NE NE section 8-2n-8e, set 10-inch casing at 217 feet; J. E. Milburn No. 1 Streigle, SE NW NE section 19-3n-8e, rig; Pure Oil Co. No. 5 Chaffin, SE NW SW section 27-3n-8e, location; Pure Oil Co. No. 6 C. Wilkins, SW SW SE section 28-3n-8e, location; Pure Oil Co. No. 1 G. L. Travis, SE SE SW section 33-3n-8e, cellar and pits.

In Richland County, Pure Oil Co. No. 1 Anna Schneider, NW NW NW section 3-3n-9e, is a location; Ohio Oil Co. No. 5 Arbuthnot, NW NW NE section 8-3n-9e, cellar and pits; Ohio Oil Co. No. 6 Arbuthnot, NE NW NE section 8-3n-9e, location; J. V. Wright No. 1 Ainsbrook, C N half NE NE section 17-3n-9e, location; Charles L. McMahon No. 1 Federal Land Bank, SW SE NW section 27-4n-9e, location; Carter Oil Co. No. 2 Watkins, NE NW NW section 34-4n-9e, rig up; Mammoth Producing & Refining Co. No. 4 Standford-Heitz, SW SE NW section 34-4n-9e, location.

In Montgomery County, Schlossberg & Sigel made a location for No. 1 Nieman, C SE SW section 29-8n-5w.

In Sullivan County, A. B. Bursten has machine on the ground for a 2,350-foot test, No. 1 Riley Dobb, SW SE NE section 7-8n-8w. The test is on a 4,000-acre block.

Drilling Reports

Schlossberg & Sigel were drilling at 2,016 feet in No. 1 Roddy, SW SE SW section 20-2n-3e, in Marion County, and Marion Oil Co. set 10-inch pipe at 364 feet in No. 1 Wilson, NE NE SE section 18-3n-3e.

In Richland County, Ohio Oil Co. No. 4 Arbuthnot, NE NE NW section 8-3n-9e, swabbed and flowed 1,026 bbls. of oil in 24 hours from pay at 2,940-53 feet, but was not a completion. Pure Oil Co. No. 1 Wilson, SE SE NE section 33-4-9, set 7-inch casing at 2,966 feet and had pay at 3,000-14 feet. It flowed 135 bbls. in six hours. Southern Illinois Oil Corp. No. 1 Allard, NW NW NW section 16-3n-9e, had Weiler sand at 2,575 feet and was drilling at 3,018 feet. It showed some oil on a drill stem test.

In Wayne County, Fitzpatrick & Myers No. 1 Shannon, SW NW NE section 26-2n-8e, was at a total depth of 3,067 feet. It pumped 200 bbls. of fluid in 24 hours, 90 per cent of which was salt water. The crew will run packer with tubing below the 8-inch casing and make another test.

In Clay County, Elmer Hupp and others No. 1 Bemis, SE SE NW section 14-3n-8e, total depth 3,017 feet, was thrice acidized with 500-gallon, 1,500-gallon and 2,500-gallon doses, and later pumped 204 bbls. of oil in 24 hours. It was not a completion. M.O.K. Oil Co. had rig up for No. 2 Bemis, SW SE NW section 14-3n-8e. Graham & Duncan No. 3 Land Bank, NW SE NE section 8-2n-3e, had Weiler sand at 2,662 feet and was coring at 2,980 feet. Pure Oil Co. No. 2 Staley, SW NW SW section 9-2n-8e, had pay at 2,995½-98½ feet, which was acidized with 500 gallons. It swabbed 96 bbls. of net oil in 12 hours. The crew was still testing. Graham & Duncan No. 1 Carroll, NE SE NE section 8-2n-8e, was drilling at 2,780 feet. It topped Weiler sand at 2,675 feet, and the same firm was drilling at 2,799 feet in No. 2 Carroll, SE SE NE section 8-2n-8e. Gordon Oil Co. No. 2 Stock Land Bank, SE NE SE section 8-2n-8e, had pay at 3,013-20 feet, total depth 3,038 feet. Seven-inch pipe was set at 2,980 feet. The pay was acidized with 1,500 gallons and later swabbed 400 bbls. in 13 hours. It was to be reacidized. Leonard Brothers No. 1 Logan, SE SW NW section 2-3n-6e, a wildcat, was drilling at 3,010 feet, with nothing showing. J. C. Shaffer No. 1 Leibke, SE SE SW section 17-3n-7e, was drilling at 2,120 feet. Pure Oil Co. No. 3 Bechtel, SE SE NW section 33-3n-8e, has pay at 2,947-63 feet and 2,969-77 feet. It was acidized with 1,000 gallons and flowed 162 bbls. of oil in nine hours. Pure Oil Co. No. 2 Moseley, SW SE NE section 33-3n-8e, had pay at 2,957-60 feet, 2,974-78 feet and 2,986-91 feet, total depth 3,004 feet. Seven-inch casing was set at 2,927 feet. J. V. Wicklund No. 1 McCauley, SW SW SE section 23-3n-8e, was acidized with 500 gallons with the hole loaded to the top with oil. It swabbed 69 bbls. of oil and then salt water. Later the hole filled 800 feet with salt water. The total depth is 2,999 feet. Mammoth Producing & Refining Co. No. 1 Bemis, SE SW SE section 9-3n-8e, was drilling at 3,158 feet. It had had no showing of oil. Leonard Brothers No. 1 Logan, SE SW NW section 2-3n-6e, was drilling at 3,010 feet with no signs of oil as yet.

In Wayne County, Benedum & Trees, Inc., No. 1 Knapp, SE NW SW section 33-2n-8e, had St. Genevieve lime at 3,070 feet. Seven-inch casing was set at 3,140 feet. A drill stem test developed a showing of oil.

In Clinton County, Bell Oil Co. No. 1 Maddox, C W half NW SW section 4-1n-3w, was shot with 20 quarts at 2,993-94½ feet and the well is estimated to be good for 100 bbls. per day but had not been completed.

In Fayette County, Carter Oil Co. No. 1 Miller, S W half NW NW section 12-8n-3e, had sands at intervals from 1,634 to 1,780 feet, and a bleeding core at 1,818-20 feet and was coring ahead. St. Genevieve lime was topped at 1,752 feet.

In Effingham County, Kingwood Oil Co. No. 1 Bartel, C W half NW NE section 26-6n-5e, set 10-inch casing at 137 feet. Faurot, Hazlett & Mitchell No. 1 Haasman, NE NW NE section 5-7n-6e, was coring at 2,737 feet, with no showing as yet.

In Christian County, Parshall & Graham No. 1 Yockey had Niagara lime at 1,945 feet and had a saturated core at 1,944½-51 feet.

OHIO

FINDLAY, Ohio, Oct. 11.—In the northeastern section of Ohio, Licking County leads in the number of completions. In section 12, Fallsbury Township, Licking County, Emerald Petroleum Co. drilled No. 3 I. M. Cochran to the Clinton sand and it made 92 bbls. the first 24 hours after shot. The sand was found at 2,990-3,040 feet. In Perry Township, same county, section 14, Rutledge and others No. 1 William Teagarden was completed, a 5-bbl. oil well in Berea sand at 640-60 feet. In the same township, section 16, George Vandergrift completed a 10-bbl. Berea well in No. 1 Beulah Weigle. Sand was found at 758-70 feet. In Newton Township, Licking County, Lot 4, fourth quarter, Bebout & Sons completed No. 2 on the Harry Gleckler tract in Berea sand for 3 bbls. a day. Sand was at 749-59 feet. In Licking Township, Wehrle Gas Co. completed a dry hole in the Cinnamon shale, No. 2 William Clemm, in section 1. The Cinnamon was at 1,285-1,365 feet.

In Muskingum County, Licking Township, third quarter, E. H. Everett Co. No. 2 Gertrude Vroom was completed. It made 55 bbls. of oil the first 24 hours after a shot in the Clinton formation. The sand was found at 3,193-3,233 feet. In Newton Township, section 21, the Ohio Fuel Gas Co. completed No. 2 John Hansen as a dry hole in the Clinton sand at 3,463-3,515 feet. The total depth of the hole was 3,562 feet.

In Ridgeville Township, Lorain County, Lot 42, William Dempsey completed No. 1 John H. Lyons through the Clinton formation as a gas well making 952,000 feet per day, with a rock pressure of 950 pounds. The total depth was 2,388 feet, with the sand at 2,366-2,387 feet.

In Summit County, Green Township, section 34, East Ohio Gas Co. completed No. 1 Addie Serfass through the Clinton sand. The well was shut in with a 330,000-foot gas production, rock pressure 1,155 pounds. The sand was reached at 4,302-4,326 feet, total depth 4,424 feet.

In Ashland County, Perry Township, section 20, Stewart completed No. 8 Elizabeth Davault, a dry hole in the Berea sand. The sand was reached at 693-701 feet.

In Stark County, Plain Township, section 4, Lyons completed No. 1 Elizabeth Shaffer in Clinton sand as a 1,172,000-foot well, with a rock pressure of 790 pounds. Clinton sand was found at 4,520-51 feet.

In Morgan County, Marion Township, Lot 32, the Ohio Fuel Gas Co. No. 4 N. M. Wood was completed in the second Berea formation. The well was shut in. It is good for 196,000 feet per day. The sand was at 1,629-50 feet.

In Meigs County, Salisbury Township, section 36, T. W. Bengal drilled No. 2 Albert Heilman from the Maxon to the second Berea sand, and it made 1 bbl. of oil. The second Berea was reached at 1,589-1,602 feet. In Lebanon Township, same county, section 21, J. M. Clark completed the Mary Reese in the first Berea as a 1-bbl. well. The Berea was reached at 2,006-09 feet.

In Guernsey County, Jefferson Township, section 4, George Jewell drilled No. 2 Don P. Kennedy through the Berea sand. It made 134,000 feet of gas, naturally. The sand was encountered at 1,241-1,243 feet.

In Noble County, Jackson Township, section 2, the Boone Oil & Gas Co. completed No. 7 Lawrence C. Wilson in the Macksburg 300-foot sand for a 1-bbl. pumper. The sand was found at 440-530 feet.

In Monroe County, Perry Township, section 9,

Sutton Brothers completed No. 14 J. H. Rosenlieb in the Injun sand with a production of approximately 2 bbls. per day after the shot. The top of the sand was found at 1,438 feet, with a total depth of 1,482 feet. In Washington Township of the same county, section 11, N. B. Franchot drilled No. 21 Mary L. Delaplain deeper from the Keener to the Berea for about a 1-bbl. pumper. The Berea was reached at 1,970-78 feet.

WESTERN KENTUCKY

OWENSBORO, Ky., Oct. 11.—Eleven completions, four of which were oil wells, two gas wells and five dry holes, comprised the record of the week in Western Kentucky. A third deep test was started, a reflection of the play in Illinois and Indiana in search of oil in the Central Coal Basin, which extends into Kentucky. One of these tests is in Hancock County, one in McLean County and one in Webster County.

Following is the report of completions and drilling operations.

Hancock County

Easton district: J. C. Ellis No. 23 Smith Heirs, 75 bbls., Jett sand, 397-422 feet, shot with 80 quarts.

Victoria School district: J. H. Taulbee No. 2 Ed Newton, spudding in.

Hawesville district: Galey & Flecher No. 1 J. W. Holder, deep test, shut down at 1,508 feet.

Duke's School district: Galey & Fletcher No. 1 Tom Mason, rigging up.

Adair district: Taylor Brothers and others No. 2 John Allard, dry hole, through Bethel sand, total depth 702 feet.

Floral district: Groverly Oil & Gas Co. No. 7 Ab Baker, 368,000 feet of gas, 182 pounds rock pressure, Jackson sand 540-50 feet; No. 8 is rigging up.

Pellville district: Frank Damron and others No. 4 Alice Bates, 194,000 feet of gas, Jackson sand 580 feet, gas at 595-618 feet, water at 622 feet, plugged back to 618 feet, total depth 623 feet.

Ohio County

Fordsville district: Joe May No. 1 O. T. Cheek, dry hole through Barlow sand, total depth 721 feet.

Friendship Church district: Joseph B. Myers No. 3 Tom Hamilton, 15 bbls., Barlow sand at 606-21½ feet, total depth 623 feet, shot 60 quarts.

Heflin district: Boiling & Callas No. 4 Mrs. J. Simmerman, spudding in. W. W. Damron No. 1 W. F. Coffman, dry hole through Jones sand, 1,173-1,194 feet. Kentucky Natural Gas Co. No. 5 Smith & Cox, Jones sand dry, drilling at 1,100 feet.

Livermore district: Oliver Jenkins and others No. 3 W. L. Tichenor, Jett sand at 1,131-45 feet, drilling at 1,160 feet, going to the Bethel sand.

Daviess County

Cane Run School district: Ashby & Ellis No. 8 Myrtle Howard, spudding in.

Utica district: Daugherty & Ellis No. 3 C. W. Howard, Jett sand 1,080-93 feet, filled up 100 feet, will shoot.

McLean County

Livermore district: Clark & Snyder No. 5 E. Humphrey, drilling Jones sand at 1,150 feet. W. E. Hupp No. 27 Hackett Brothers, 50 bbls., Bethel sand 1,422-42 feet; No. 28 is drilling at 600 feet. Culbreth and others No. 2 Hollis Howell, 50 bbls., Jett sand at 1,126-38 feet, pay 1,138-42 feet, shot with 100 quarts, filled up 600 feet, total depth 1,152 feet.

Island district: South-Penn Oil Co. No. 1 Mrs. Rena Brown, deep test, drilling at 1,841 feet.

Knobs district: Cumberland Petroleum Co. and others No. 8 Elmer Nall, south 100 acres, spudding.

Breckenridge County

Tar Fork district: J. C. Ellis No. 2 Frank Dean, drilling at 250 feet.

Henderson County

Niagara district: Ranger Oil Co. No. 20 C. M. Gish, spudding.

Union County

Boxville district: H. Z. Clark and others No. 3 Waller Young, drilling at 350 feet.

Hart and Grayson County Line

Between the towns of Wax and Pyramid: Henry Farmer No. 1 John Clements is drilling at 1,100 feet in black lime; a 200,000-foot gas production was uncovered at 900 feet.

Webster County

Sebree district: Rowe & Browning and others No. 6 J. R. Ramsey, deep test, spudding in.

Butler County

Rochester district: H. C. Daugherty No. 1 Lucien Norris, dry hole through Jackson sand, total depth 925 feet.

EASTERN KENTUCKY

ASHLAND, Ky., Oct. 11.—Four small oil well completions, one gas well and a report of an old well again being in production are included in the eastern Kentucky field operations this week.

Kentucky-West Virginia Gas Co. completed No. 553 on the Isom Gibson farm in Knott County at a total depth of 2,622 feet, in white slate. The well has daily gas flow of 476,000 feet.

A. V. Hoenig reports the completion of No. 9 L. M. Wheeler land in the Wheelersburg district, Magoffin County, with a daily production of 3 bbls. The Venus Oil Corp. cleaned out an old well, No. 4, on the W. H. Conley farm. This well, out of production for years, is expected to make 5 bbls. per day. A. V. Hoenig is cleaning out other old wells on the Conley farm.

The Bed Rock Petroleum Co. has a 3- to 5-bbl. production in No. 10 on W. M. Prater farm on Prater Fork of Mash Fork in Magoffin County, with top of sand at 1,305 feet.

Rush Cable reports the completion of No. 6 on the Lafayette Noe land on Little Sinking in Lee County at a total depth of 1,015 feet with a flow of 5 bbls. of oil per day.

Mrs. Agatha Wireman completed No. 19 on the J. M. Townsend farm in Powell County, good for 10 bbls. of oil per day.

Drilling operations in eastern Kentucky by counties follow:

Knott County

The Inland Gas Corp. was below 1,706 feet in No. 2 E. A. Hammonds farm, on Right Fork of Troublesome Creek, drilling slate and shells. The same firm had reached the 1,811-foot mark in sand, in No. 3 on R. C. Kilgore land nearby and is drilling at 418 feet in slate and shells in No. 1 on Mayo Craft land in same locality.

Floyd County

The Inland Gas Corp. had reached 1,681 feet in No. 1 on Ollie M. Glenn heirs land on Levisa Fork in Floyd County. Kentucky-West Virginia Gas Co. was setting machine at No. 557 on Ingram Stepp land on Johns Creek, and is building road to No. 558 on John Layne land, mouth of Camp Branch of Levisa Fork. The same firm was drilling at 880 feet in salt sand in No. 5,229 on John M. Woods land on Porter Branch.

Martin County

The Kentucky-West Virginia Gas Co. was down 760 feet in sand in No. 5,226 on C. W. Preece land on Coldwater Fork and was drilling sand at 845 feet in No. 5,230 on the same farm.

Magoffin County

A. V. Hoenig is setting up rig at No. 12 on Paris Long farm in Magoffin County.

In the Burning Fork district C. J. Sipie & Co. is waiting for water at No. 7 on William Salyers land on Birch Branch. Hupp & Duff and others have shut down for a while at No. 12 on B. F. Whitt No. 1 land on Rock House Creek. Bed Rock Petroleum Co. is cleaning out No. 10 on W. M. Prater land on Prater Fork of Mash Fork at 1,327 feet. Top of sand at 1,303 feet with estimated production of 3 to 5 bbls.

Lawrence County

McKinster Brothers are down 1,350 feet in No. 1 on Mrs. E. G. McKinster land on Little Blaine in the Busseyville-Fallsburg district in Lawrence County. There are two strings of tools in hole and operators are drilling by. Kentucky Oil Producers had reached the 125-foot mark in No. 1 on Mart Mullins land in the Keaton district. Cumberland Petroleum Co. is down 1,990 feet in No. 13 on Derius Conley land at Springs Fork.

Wolfe County

McCoun & Wissing were drilling at 1,160 feet in No. 1 on the William White land on Bear Pan of Devils Creek with completion expected soon.

Lee County

C. E. Townsend, agent, was drilling at 850 feet in No. 10 on Andrew Combs land on Billie's Fork in the Big Sinking district of Lee County and had reached 200 feet in No. 11 on the same farm. McCoun & Wissing were at the 1,070-foot level in No. 5 on the Combs farm while Oakes and Crabtree were down 500 feet in No. 3 on the same farm. R. T. Barnes No. 3 on the Alvin White land in the same locality was drilling at 400 feet. Thomas Whitner is down 735 feet in No. 4 on C. J. Tipton farm. Flahaven Land Co. No. 96 South Fenn Oil Co. Operator was drilling at 750 feet.

Powell County

Mrs. Agatha Wireman has No. 20 on Townsend land down 300 feet. Petroleum Exploration is down 700 feet in No. 11 on Lillie Belle Watson farm in same district.

N. Y.-Penna. Gas Fields

COUDERSPORT, Pa., Oct. 11.—Four new locations, three of them in the Woodhull field, Steuben County, New York, featured developments in the New York-Pennsylvania deep sand gas fields in the week ending October 8. The new Woodhull locations are: New York State Natural Gas Co., 930 feet from the west and 325 feet from the north lines of the Chester L. Bonham farm, elevation 1,745 feet. New York State Natural Gas Co., 600 feet from the north and 600 feet from the west lines of the Charles Finch farm, elevation 1,760 feet. Belmont Quadrangle Drilling Co., 1,478 feet from the west and 500 feet from the south lines of the John Allen farm, elevation 1,811 feet. The fourth location is in Potter County, Pennsylvania, where French and others will drill 2,600 feet from the west and 900 feet from the north lines of the Mary Webster farm in Genesee Township.

Pennsylvania Operations

Blowing in with a daily production of 3,500,000 feet on Friday at 6 a.m., the H. C. Drilling Co.'s gasser on the A. D. Van Scoy lease, Lot 4, Hamilton Township, McKeon County, 7 miles west of Sugar Run on the Bradford-Warren road, slowed its tempo to an output of 600,000 feet at 5 p.m. on the same day. Gas was struck at a depth of 4,751 feet, the Oriskany sand having been encountered at 4,750 feet. Drilling was continued Saturday with the bit to probe to 4,775 feet if necessary. The Oriskany sand, it is estimated, has a thickness of between 18 and 20 feet.

The Potter Development Co. neared a depth of 6,000 feet in its test on the Crawford farm, Keating Township, Potter County, one of the deepest tests yet drilled in these fields. The same company is fishing at 5,700 feet on the Haupt farm, West Branch Township, Potter County. In other operations in this county G. L. Cabot, Inc., is drilling at 4,710 feet on the R. Johnson farm, Bingham Township; P. P. & L. Co. is drilling at 4,185 feet on the G. M. Whitman farm, Harrison Township; New York State Natural Gas Co. is drilling at 120 feet on the A. D. Marble farm, Harrison Township, and Ward Wasson is drilling at 720 feet on the R. B. Hall farm, Genesee Township. New York State Natural Gas Co. skidded the rig 8 feet south of its previous location on the A. Schofield No. 2 farm, Harrison Township. G. L. Cabot, Inc., is preparing to drill on its recently established location on the Orwin & Carlson farm, Wharton Township.

Updegraff is drilling at 4,405 feet on the C. E. Erickson farm, Elk Township, Warren County. In this county, Kent Kane and others got a second show of gas, 25,000 feet, at 4,412 feet in the test on Lot 515, Watson Township, which is now drilling at 4,414 feet. Evjen and others are drilling 3,110 feet on the Dusenberry farm, Watson Township, and Belmont Quadrangle Drilling Co. has the rig up on Lot 487, Pleasant Township.

New York State Natural Gas Co. is deepening its test on the A. W. Leonard farm, Westfield Township, Tioga County, after it gauged 4,000,000 feet in the Oriskany reached at 4,582 feet. The gas flow increased as the well was deepened. It is now drilling at 4,589 feet.

New York Operations

The status of operations in the active Woodhull field, Steuben County, follows: Sylvania Corp. shut down at 3,973 feet, 26 feet below the top of the On-

(Continued on Page 104)

Oklahoma Operations

By
DAL DALRYMPLE

FITTS HUNTON LIME SECTOR EXTENDED AT OUTPOST WELL

Extension of the Fitts field of Pontotoc County more than one-half mile northward was the feature of the week in Oklahoma field activity. Smith, Christian and Arrow Drilling Co. No. 1 Banks, SW SE SE section 16-2n-7, the extensioner, flowed 86 bbls. of oil in 30 minutes through perforations in Hunton lime at 4,180 to 4,200 feet, total depth 4,246 feet. Later, it flowed 37½ bbls. of oil in 30 minutes and other flows nearly filled a 500-bbl. tank. It had been acidized.

Originally, the well was drilled to 2,024 feet and listed as a shallow failure, and many oil men doubted it would make a producer in deeper horizons as it was thought to be too far north and outside the proven Hunton lime zone in the Fitts field. W. F. Smith of Miami, and N. D. Christian and the Arrow Drilling Co. of Tulsa believed it would make a producer, and determined to deepen the old hole. As a result of the Hunton lime strike, it was expected the operators would file claim for a discovery well, thus allowing 15,000 bbls. production before proration.

Magnolia Petroleum Co., Manahan Drilling Co. and Tide Water Associated Oil Co., and Mattson & Phillips of Ada were reported preparing to start offsets to the No. 1 Banks. Numerous other tests in the general area are likely to be drilled as a result of the strike.

An important sale was recorded in Oklahoma the past week when Shell Petroleum Corp. bought the Raivern Oil Co.'s properties in the Dill field, Okfuskee County, for a reported $1,000,000, of which $700,000 was cash and the remainder to be paid in oil. The property includes nine Hunton lime producing wells.

Wildcat Completions

Ten wildcats were completed in Oklahoma the past week, one being a producer and pool extensioner and the others resulting in failures. One wildcat location was reported abandoned.

E. J. Shaffer and J. Estes No. 1 Haunchild, NE NE SW section 8-28-1w, extended the old Braman pool of Kay County southward and started a new play in that area. Top of Wilcox sand was found at 3,513 feet, total depth 3,523 feet. It had initial production of 450 bbls. of oil in 28 hours and flowed 2,394 bbls. of oil in seven days, averaging 342 bbls. daily, through casing. Gravity of the oil was 42.5 degrees.

Continental Oil Co. and others No. 1 Community, NW NW SE section 7-15-5e, Lincoln County, had Wilcox sand at 4,462-88 feet, total depth 4,540 feet, the sand tasted salty and it was dry and abandoned.

W. R. Hollenbeck No. 1 Norman, NW NW NE section 17-9-2w, Cleveland County, topped second Wilcox sand at 7,645 feet, Schlumberger test indicated salt water and it was dry and abandoned at 7,695 feet, total depth.

J. F. McManmon and associates No. 1 School Land, NW NW NE section 16-21-5e, Pawnee County, had a hole full of water in Bartlesville sand at 3,206-40 feet, total depth, and was abandoned.

Roy S. Nash and others No. 1 Miller, C N half NE SE section 29-6-3e, Pottawatomie County, had Wilcox sand at 4,400 feet, total depth 4,415 feet, water intruded, perforating of casing failed to help, and it was abandoned.

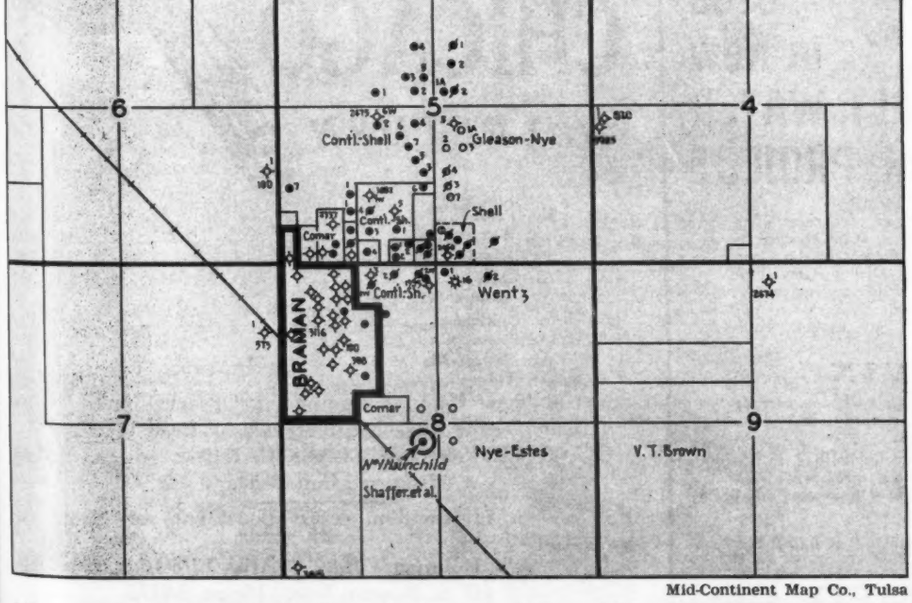
Kerlyn Oil Co. No. 1 Ball, NW SW NW section 9-5-3e, Pottawatomie County, was dry and abandoned in Viola lime at 3,805-25 feet, total depth.

Ace Gutowsky No. 1 Howard, NE SW NW section 10-3n-19w, Jackson County, had a show of oil in Granite Wash at 855-67 feet, but was dry and abandoned at 950 feet, total depth, in Granite Wash. Same operator's No. 1 Lee, NW NW SE section 36-2n-19w, was an abandoned wildcat location.

Clyde Becker and others No. 1 Pharris, SE SE NW section 24-6n-12w, Caddo County, was shut down and temporarily abandoned in the records at 6,522 feet, total depth.

H. L. Merrick and others No. 1 Noske, SE SE NW section 1-6n-17w, Kiowa County, topped Hunton lime at 786 feet, had a hole full of water at 1,200-05 feet, total depth, in lime and was abandoned.

Kiowa Oil Corp. No. 1 Finder, C SW NE section 4-6n-20w, Kiowa County, was dry and abandoned at 1,050 feet, total depth, in Granite Wash.



Mid-Continent Map Co., Tulsa

Offsets are being started to Shaffer and others No. 1 Haunchild, section 8-28-1w, which extended the old Braman pool of Kay County to the south

Estimated Daily Production

Estimated daily production of Oklahoma for the week ending October 9 and for the preceding week was as follows:

	Barrels	
	Oct. 9	Oct. 2
Allen	5,200	5,275
Billings	6,850	8,125
Burbank	7,950	7,925
South Burbank	14,250	13,500
Balance Osage	20,250	20,750
Blackwell district	5,025	5,100
Bristow-Slick	7,175	7,250
Chandler	2,800	2,775
Crescent	7,625	7,850
Cromwell	3,425	3,400
Cushing-Shamrock	11,000	10,800
Duncan district	3,975	3,950
Edmond	15,500	15,450
Fish	6,000	5,875
Fitts	70,225	74,325
Jesse	2,375	2,850
Graham	4,400	4,425
Gray	1,200	1,200
Healdton	10,100	10,200
Hewitt	4,275	4,250
Holdenville	875	875
Keokuk	7,275	6,575
Konawa	1,625	1,675
Lucien	13,875	14,650
Moore	9,850	9,675
Oklahoma City	150,575	141,750
Olympic	10,650	10,700
Polo	875	875
Sasakwa and townsite	2,150	2,550
Sholem-Alechem	3,050	3,025
Seminole:		
Bowlegs	11,475	11,450
Carr City	4,925	5,100
Earlsboro	6,275	6,400
South Earlsboro	725	700
East Earlsboro	7,475	7,375
Little River	9,625	9,525
East Little River	1,125	1,075
Maud	750	725
Mission	2,000	2,000
Seminole	9,725	9,700
East Seminole	2,325	2,375
Searight	4,325	4,300
Total Seminole	60,750	60,725
St. Louis-Pearson	18,650	18,525
Tatums	5,825	5,800
Tonkawa-Garber-Thomas	4,475	4,500
Wewoka	2,775	2,875
Yale-Jennings	4,200	4,175
Other pools	78,975	76,950
Total Oklahoma	586,050	581,175

Pontotoc County

Twelve new wells were completed in the Fitts field, Pontotoc County, the past week. E. H. Moore No. 11-A Schauers, SW NE NW section 29-2-7, topped Cromwell sand at 2,540 feet, total depth 2,665 feet, and flowed 335 bbls. of oil through tubing in 24 hours.

E. H. Moore No. 4-A Harper, NW SW NE section 29-2-7, found Cromwell sand at 2,517 feet, was bottomed at 2,700 feet, and flowed 115 bbls. of oil through tubing in four hours, the first hour naturally and the last three hours on gas lift.

Skelly Oil Co. completed three wells on the Park College lease. The No. 29 Park College, NE SW NE section 28-2-7, had Cromwell sand at 2,395 feet, total depth 2,550 feet, and flowed 100 bbls. of oil in four hours through tubing choke. The No. 30 Park College, SW NW NE section 28-2-7, flowed 100 bbls. of oil in four hours through tubing choke from Cromwell sand at 2,446 feet, total depth 2,599 feet. The No. 31 Park College, NW NW NE section 28-2-7, had Cromwell sand at 2,550 feet, total depth 2,680 feet, and flowed 120 bbls. of oil through choke on tubing in four hours.

Amerada Petroleum Corp. No. 12 Smith, SW SE NW section 28-2-7, found Cromwell sand at 2,345 feet, total depth 2,480 feet, and flowed 100 bbls. of oil in four hours through choke on tubing.

Crusaders, Inc., and Simpson No. 5-B Woolley, NE NE SE section 28-2-7, flowed 115 bbls. of oil through tubing in 24 hours from Cromwell sand topped at 2,380 feet, total depth 2,382 feet.

Crusaders, Inc., No. 2-B Morin, SW SE SE section

20-2-7, found top of Cromwell sand at 2,646 feet, was bottomed at 2,677 feet, plugged back to 2,671 feet and pumped 40 bbls. of oil in 24 hours.

Sinclair Prairie Oil Co. No. 5 Moody B, NW NE NW section 22-2-7, topped Hunton lime at 3,906 feet, total depth 3,913 feet, was acidized, flowed 98 bbls. of oil net through tubing in four hours, and later made potential of 126 bbls. of oil.

Simpson-Fell Oil Co. No. 1-B Westheimer, SE NE NE section 27-2-7, found Cromwell sand at 2,517 feet, total depth 2,670 feet, was shot and flowed 119 bbls. of oil in four hours through tubing.

Magnolia Petroleum Co. No. 13 Norris, NE SW NW SE section 21-2-7, topped Viola lime at 4,070 feet, total depth 4,280 feet in lime, was acidized, flowed 180 bbls. of oil net in four hours through tubing, and made potential of 644 bbls. of oil, with 1,000,000 feet of gas. Same company's No. 1 Mayhue, NW SE SE section 20-2-6, pumped 100 bbls. of oil in 24 hours from Cromwell sand topped at 3,080 feet, total depth 3,190 feet.

Three old Fitts wells were plugged back and recompleted. E. H. Moore No. 13 Schauers, NW cor. section 29-2-7, was plugged back from 3,818 feet, total depth, to 2,808 feet, perforated casing and pumped 25 bbls. of oil and 100 bbls. of water in 24 hours. It had Cromwell sand at 2,640-2,730 feet. Same operator's No. 16 Schauers, NE NE NW section 29-2-7, plugged back from 3,765 feet to 2,812 feet, perforated casing and pumped 13 bbls. of oil in 18 hours from Cromwell sand topped at 2,610 feet. Magnolia Petroleum Co. No. 1 Norris, SE SE NE section 26-2-6, was plugged back from 4,424 feet to 3,830 feet, was acidized and flowed 5 bbls. of oil every third day through bradenhead, from Hunton lime topped at 3,770 feet.

New work in Pontotoc County: Deep Rock Oil Corp. No. 2 Garrett, SE NE SE section 3-1n-7, rig; Continental Oil Co. No. 3 Monroe, NE SW NW section 12-1n-7, location; Crusaders, Inc., No. 3 Norris, NE NW NE section 25-2-6, drilling at 2,400 feet; Carter Oil Co. No. 2 Brown, NE SE SE section 25-2-6, an old well, plugged back from 4,180 feet to 3,550 feet, waiting on cement; Sinclair Prairie Oil Co. No. 5 Vivian, SW NW NW section 22-2-7, cellar and pits; R. W. Simpson and Crusaders, Inc., No. 2-B Woolley, NE NW SE section 28-2-7, rig; E. H. Moore No. 10-A Schauers, SE NW NW section 29-2-7, building rig; same operator's No. 3-A Schauers, NE SW NW section 29-2-7, location; Raemor Drilling Co. No. 1 Balthorp, SE NE SE section 10-4-6, an old well being deepened, drilling at 1,151 feet; Barbara Oil Co. No. 4 Chapman, SE SE SW section 25-5-7, rig.

Lincoln County

Summit Drilling Co. No. 1 Eakers, NW SE SW section 35-15-2e, North Wellston pool, Lincoln County, found Wilcox sand at 5,114 feet, was bottomed at 5,130 feet, and flowed 1,330 bbls. of oil naturally in 24 hours, with 2,000,000 feet of gas, completed.

Stanolind Oil & Gas Co., Amerada Petroleum Corp. and others No. 4 Crawford, NE NW SE section 35-15-2e, topped Wilcox sand at 5,102 feet, total depth 5,124 feet, flowed 225 bbls. of 40-gravity oil in six hours and made potential of 621 bbls. of oil.

Phillips Petroleum Co. No. 2 Witwer, NW SE NE section 35-15-2e, flowed 56 bbls. of 40-gravity oil in six hours for potential rating of 163 bbls. of oil, with 14 per cent basic sediment and salt water. Gas gauged 1,500,000 feet. Wilcox sand was topped at 5,104 feet, total depth 5,136 feet.

Stanolind Oil & Gas Co., Amerada Petroleum Corp. and others No. 1 Lewis, SW cor. section 33-15-3e, an old well, was plugged back from 5,112 feet to 5,091 feet and pumped 5½ bbls. of oil and 7½ bbls. of water in 24 hours, pumped off and was recompleted.

Four new operations in Lincoln County were reported: Mid-Continent Petroleum Corp. No. 1 Vinson, SW SE SE section 4-13-6, location; Summit Drilling Co. and others No. 2 Eakers, SW SE SW section 35-15-2e, location; Stanolind Oil & Gas Co. and Amerada Petroleum Corp. No. 3 Eakers, SW NE SW section 35-15-2e, digging cellar; Gulf Oil Corp. No. 3 Lee, NW SW SW section 36-15-2e, building rig.

Noble County

Continental Oil Co. No. 9 Conway, NE SE SW section 16-23-2w, Billings pool, Noble County, flowed 457 bbls. of oil in six hours and made potential of 1,647 bbls. Production was from Wilcox sand topped at 4,258 feet, total depth 4,287 feet.

Hall & Briscoe and others No. 1 Henn, SE SW NE section 32-20-2w, Lucien field, was an abandoned location.

Seminole County

Paul Traugh No. 2 Dotson, NW SE SE section 22-6-6, Seminole County, had a broken sand at 2,320 feet, found no oil and was dry and abandoned at 2,376 feet, total depth.

Ada Drilling Co. No. 1-A Logan, NE NE SE section 25-8-7, had dry sand at 2,222-44 feet and was abandoned at 2,274 feet, total depth.

Paul Traugh No. 1-A Williams, NE SE NE section 22-6-6, was drilling at 1,500 feet. Manahan Oil Co. and others No. 1 Scroggins, NE NW SE section 22-6-6, was drilling at 980 feet.

Pottawatomie County

Magnolia Petroleum Co. No. 1 McMoran, SW SW NW section 32-11-5, East Shawnee area, Pottawatomie County, topped Simpson Dolomite at 4,828 feet, Wilcox sand 4,848 feet, total depth 4,853 feet, plugged back to 4,840 feet, swabbed 60 bbls. of oil and 20 bbls. of water in 24 hours and was completed as a Dolomite producer.

Atlantic Refining Co. No. 1 Billington, C NE SW section 12-9-4, Pottawatomie County, was a location.

Latimer County

LeFlore Gas & Electric Co. No. 23 Lewis, SE SW SW section 4-6-22, northeastern Latimer County, had Hartshorne sand at 1,600-1,712 feet, total depth 1,874 feet, plugged back to 1,712 feet, was shot and produced 2,000,000 feet of gas, completed.

Same company's No. 24 Weakly, C N half SW section 3-6-22, was a location.

Muskogee County

W. B. Pine No. 1 Mathews, NE SW NW section 19-15-15, Muskogee County, was bottomed at 1,510 feet, was shot at 1,485-1,500 feet, pumped 7 bbls. of oil in 24 hours and was completed.

Osage County

Two small producers were completed in Osage County. Ross Oil & Gas Co. and others No. 3 Osage, NE NW NE section 27-28-10, topped Peru sand at 1,276

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feet, total depth 1,311 feet, was shot and swabbed 25 bbls. of oil in 24 hours.

Wolverine Oil Co. No. 19 North Avant Unit, NW SW SW section 31-24-12, had Bartlesville sand at 1,574-1,675 feet, total depth and pumped 2 bbls. of oil and 5 bbls. of water daily.

Pure Oil Co. No. 25 Osage, C W half E half NW section 14-27-10, an old well, was deepened from 1,272 feet to 2,300 feet, total depth, had a hole full of water and was abandoned. R. L. Berlin No. 3 Osage, NW SW NW section 24-29-10, an old well, was deepened from 1,048 feet to 1,784 feet, pumped 5 bbls. of oil daily and was recompleted.

Peters Petroleum Corp. and Norbla Oil Co. No. 3 Osage, NW NW NE section 33-22-11, was a location.

Okmulgee County

Lease Investment Co. No. 3 Reneau, SE SW NW section 4-13-11, Okmulgee County, topped Wilcox sand at 3,147 feet, had pay at 3,161 feet, total depth 3,185 feet in sand, and flowed 175 bbls. of 44-gravity oil through tubing in 24 hours.

J. E. Dow No. 9 Spurgeon, C N half NW section 13-14-14, had Booch sand at 1,027-57 feet, total depth, was shot and swabbed 40 bbls. of oil in 24 hours and pumped 22 bbls. in 22 hours and pumped off.

The third Okmulgee County completion of the week was a failure. H. C. Detrick and others No. 1-A Smith, C S half SW SE section 9-15-14, had a hole full of water in Salt sand at 818-847 feet, total depth, and was abandoned.

New work in Okmulgee County: John Penrod No. 3-A Doyle, C N half N half SW section 15-13-14, location; J. C. McClellan No. 1-A Bean, NE SE NW section 14-12-12, location; W. O. Shock No. 8 Field, C NE NW section 16-14-11, location; F. D. Misener No. 6 James, NW SE SW section 14-14-14, location.

Garvin County

Two new producers were completed in the Garvin County sector of the Tussy pool. Cox & Hamon No. 2 Tussy, SE NE SE section 31-1n-3w, was bottomed at 3,480 feet, plugged back to 3,371 feet, and pumped 50 bbls. of oil daily from pay at 3,305-40 feet.

Magnolia Petroleum Co. No. 4 Burr, SE SE NE section 31-1n-3w, was completed as a 25-bbl. pumper at 3,350 feet, total depth. It had pay at 3,207-3,303 feet.

Texas Co. No. 1 Derdyn, NW NW NW NE section 17-1n-3w, an old well, was dry and abandoned after deepening from 1,672 feet to 1,738 feet.

Carter County

A trio of new producers was completed in the Healdton field, Carter County. Pure Oil Co. No. 33 Westheimer, SE NW SE section 4-4s-3w, had first oil sand at 917 feet, total depth 1,129 feet, and pumped 13½ bbls. of oil daily.

Same company's No. 23 Westheimer & Daube, SW NE SE section 9-4s-3w, was completed as a 3-bbl. pumper after plugging back to 1,050 feet from 1,115 feet, total depth.

Kewanee Oil & Gas Co. No. 5 Johnson, SW NE NE NW section 5-4s-3w, was shot at 1,086-1,130 feet, total depth 1,134 feet, and pumped 12½ bbls. of oil and one-half barrel of water daily. Same company's No. 11 Ferguson, NE SE NW section 6-4s-3w, was an abandoned location.

Cox & Hamon No. 8 Jackson, SW NE NE SW section 15-4s-2w, an old well, was deepened from 2,167 feet to 2,457 feet, and recompleted as a 10-bbl. pumper. Shell Petroleum Corp. No. 19 Kick, NE NW NE section 5-4s-3w, an old well, was deepened from 1,060 feet to 1,166 feet, plugged back to 1,095 feet and was abandoned.

Pure Oil Co. No. 41 McCoy, NE NE NW section 23-4s-3w, had spudded.

H. F. Potts No. 1 Johnson, SW SW SE section 10-1s-2w, wildcat north of Tatums, was drilling at 120 feet.

Caddo County

Ohio Oil Co. No. 7 Lackey, NW SE NW section 11-5-9w, Cement field, Caddo County, had sand at 4,061-80 feet, total depth, and was completed as a 40-bbl. pumper.

M. B. Blake and others No. 1-A Abernethy, NE SE SE section 35-6-10w, was rigging up rotary tools.

Grady County

T. H. McCasland No. 1 Horton, NW cor. section 8-3n-5w, Knox area, Grady County, had pay sand at 2,763 feet, total depth 2,787 feet, swabbed and flowed 195 bbls. of oil in the first 24 hours and flowed 132 bbls. the next 24 hours. Gravity of the oil was 41 degrees. Same

(Continued on Page 104)

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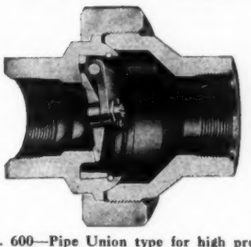

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Southwest Texas District

By
GEORGE WEBER

TEN WILDCATS IN DISTRICT WITH OIL OR GAS SHOWINGS

HOUSTON, Tex., Oct. 11.—Ten important wildcats in Southwest Texas made discoveries ranging from new oil fields to possible gas pools in the past week. Located in the widely separated sections of the district, the tests may result in considerable new production and field activity to Southwest Texas.

The Fault Line wildcats scored in four counties, with showings, the Lower Coastal district saw some revival with two possible discoveries and the Jackson trend and Laredo district shared the remaining four interesting tests. Although drilling activity in the established fields is off from the volume of the past few months, some fields, namely, Benavides, McCampbell, Branyon and Oilton are showing increased development. It is expected that added activity may follow the present spurt in new strikes, providing they develop commercial production.

Attention of Southwest Texas operators continued to be directed to the lower southwest section of the Fault Zone, as Pagenkopf & Jamieson No. 1 Houston Estate discovered production in the Austin chalk. The test, in the extreme northwest corner of Frio County, over a mile east of the Frio River and 14 miles northeast of the Batesville field of Zavalla County, topped the chalk at 2,601 feet. Pay was cored at 2,592-2,651 feet and 7-inch casing was set at 2,480 feet. The well was swabbing at latest authentic reports, and was said to have made 25 bbls. per hour of 32.4-gravity oil in heads. If successfully completed, it will open the second oil field of Frio County, northwest of the Pearsall field, which has production from the Navarro sand, Buda lime, Austin chalk and Edwards lime.

To the west of the Frio County discovery, in Maverick County, a new Edwards lime field is being brought in as Wellington Oil Co. No. 1 Chittim goes on the pump. The wildcat, located on a 375,000-acre block held by the Wellington, flowed intermittently last week through tubing set at 3,284 feet. The test was acidized and later swabbed 7 bbls. per hour. Operators are rigging up pump to flow the well. No. 1 Chittim is located in the vicinity of the Chittim gas wells, and on an extensive anticline which extends south and east through Maverick and Dimmit counties.

Important to Big Area

These two discoveries are expected to have an important bearing on new activity in the comparatively undeveloped area west of San Antonio. They have given impetus to a leasing program which has centered in the section for several months.

Located due south of San Antonio in Atascosa County, the Brown & Bell No. 1 Atkins encountered sand at 4,642-54 feet which upon testing showed a slight blow of gas in 12 minutes. The show was not considered good enough to set casing, however, and the operators are coring below 4,843 feet.

Developments of the week in the Lower Gulf Coast centered in western Nueces County. The Stratton field, located in the extreme southwest corner of the county was extended during the week by completion of the Camp Production Co. No. 1-A Wardner. The test is located in section 18, 900 feet from the Kleberg County line and about 1 mile southwest of the former production limits of the Stratton field. Casing was perforated at 6,500-05 feet with nine shots and the test came in making an initial production of 90 bbls. per day on a three-sixteenths inch choke. Pressures were 2,450 pounds on the tubing and 2,250 pounds on the casing. The production test was made on a three-sixteenths inch choke. The production is a 54.5-gravity, orange colored distillate, and the producing sand is of Frio age, a new horizon for the field.

Agua Dulce Field

The Agua Dulce field of western Nueces County is the center of considerable current attention, with four field tests active. The Texon Drilling Co. No. 2 Elliff encountered sand at 6,637-68 feet, a new producing horizon for the field, but thus far has failed to bring in commercial production from it. Perforations at 6,363-68 feet tested gasoline at a pressure of 2,475 pounds after higher perforations had shown too much gas, and operators plan to carry the test deeper.

To the northwest of Agua Dulce, on the Richard King farm lots sector, Southern Minerals Corp. No. 2 King is coring ahead after testing oil in sand at 4,020-33 feet. The test, lasting for 20 minutes showed recovery of 640 feet of oil and 850 feet of salt water with working pressure of 35 pounds. The wildcat is located over a mile from the King gas field near the Nueces-Jim Wells county line.

Laredo District

In the Laredo district, three fields have potential extensions as three wildcats this week show production possibilities. In Webb County the Carolina-Texas field seemed due for expansion, as the E. J. Purl No. 2 Garza cored sand at 2,100-07 feet, which showed oil, and operators were last reported drilling out bridge at 2,117 feet before completion.

In the same county and four and one-half miles south of the Oilton field, the Adams & Lefevre No. 1 Garcia, near the Mirando City field, drilled to a total depth of 2,500 feet. Oil and drilling mud was tested at 1,856-66 feet two weeks ago, and on perforating at 1,860-66 feet this past week, the test showed salt water. Operators are plugging back to 1,670 feet to test an upper sand.

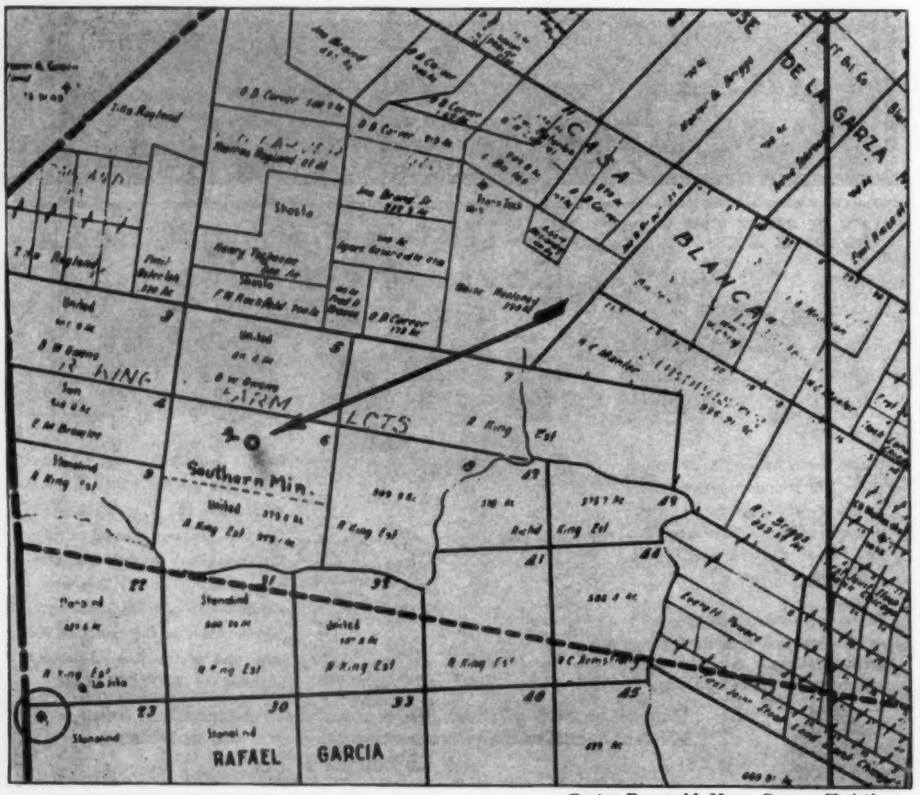
In Duval County, a field was extended during the week, and an abandoned test was reentered. The Cox & Hamon No. 1 California-Peters, located in section 32 of the Kohler district, extended the Rancho Solo field 1½ miles to the north. The semiwildcat came in during the week making an initial production estimated at 50 bbls. per day. Sand was cored at 1,838-42 feet.

In southeastern Duval County, near the Jim Wells County line, Tsesmalis No. 2 Canales, after being shut down for some time, will be placed back on the active list after having shown gas. The test is located 4 miles northwest of the West Premont field of Jim Wells County. Casing will be set, it is reported.

A new gas prospect for Jim Hogg County is seen in the Darby Petroleum Co. No. 1-B Holbien. The wildcat, in Share 3, Block 5, section 7 of the Las Animas grant, 5 miles east of the Henne-Winch-Farias field, made a drill stem test this week at 1,778-89 feet, using one-half and three-eighths inch chokes, and showed 320 pounds of dry gas in one and three-fourths minutes. The test tried to blow out, but was successfully killed. Operations are now held up pending orders. Total depth of the test is 1,789 feet in soft sand. The wildcat is located in the trend of the Cole-O'Hern field of Duval and Webb counties.

In the Jackson trend, two tests had shows during the week. The Bee County wildcat, Dougherty No. 3

(Continued on Page 105)



Porter Regenold, Maps, Corpus Christi

Southern Minerals Corp. No. 2 King, a wildcat in western Nueces County, tested oil in sand at 4,020-33 feet and is drilling deeper to explore further horizons. It is located east of the King gas field, and near the Jim Wells County line

Rocky Mountain Area

By
T. R. INGRAM

2,880 BBL. WELL COMPLETED IN GARLAND, WYOMING, POOL

DENVER, Colo., Oct. 11.—Colorado had only two shallow wells reaching the pay, both of them in the Rangely field. Neither found production.

The Yale Petroleum Corp. had a good completion in the Garland field in Wyoming in its No. 1 Stock-Jones, which made 2,880 bbls. initially from the Madison. The Ohio Oil Co. has begun development of the Bunker Hill area in Carbon County where it made a gas discovery at a shallow depth last week. Lance Creek has several wells to the deeper pay at critical depths, but none were completed. Two deepening operations were begun and one new operation was spotted.

In Montana drilling operations show a decline with no first reports in Cut Bank or Kevin-Sunburst. Two wells were disappointments in the Cut Bank area, both wildcats. The W. E. Ullman test west of the field had water in the Madison and the Alberta test across the line was abandoned. Cut Bank had two completions and Kevin-Sunburst had two, one of the latter being the largest well of the year. This was the Rice Oil Co. No. 1 Larson, which pumped 225 bbls.

The California Co. released location for an important test in Williams County, North Dakota, and has spudded in.

Arab Petroleum Corp. and R. F. Garland, trustee, No. 1 Ogle, in SE section 9-1n-14e, Richardson County, Nebraska, is reported to have a small show of black oil at 3,019 feet in the Viola lime. Operations were shut down at 3,110 feet pending the arrival of 6-inch casing.

L. R. Page and others No. 1 Bonhan, C SE SE section 31-1n-1e, Jefferson County, Nebraska, was drilling below 2,000 feet.

NEW MEXICO

Work has started at a wildcat near the town of Nadine, about 5 miles southeast of nearest production in the Hobbs field, at Eastland Oil Co. No. 1 Waldrop, C SE SE section 1-20-38. Cellar and pits had been dug.

More producing territory was added to the northwest edge of the Monument field, Lea County, when Amerada Petroleum Corp. No. 2-G State, C NW SW section 18-19-37, flowed 169 bbls. of oil through tubing in two and one-half hours after acid treatment. It was bottomed at 4,045 feet in lime, and had not been completed.

The Skelly sand pool was extended 1 mile southward at Continental Oil Co. No. 1-A-15 Cline, C NE NW section 15-23-37, which pumped 11 bbls. of oil and 4 bbls. of water daily. It was completed after topping pay at 3,530 feet, drilling to 3,860 feet, total depth, where sulfur water intruded, and plugging back to 3,672 feet.

Other Lea County completions were as follows:

E. G. Bradley No. 1 Lanehart, C SW NE section 28-25-37, topped pay at 3,221 feet, total depth 3,301 feet, produced 12,000,000 feet of gas.

Anderson-Prichard Oil Corp. No. 1 Lanehart, NE NW SW section 21-25-37, pay 2,917 feet, total depth 2,928 feet, flowed 15 bbls. of oil an hour.

Culbertson & Irwin No. 2 Moseley, NE NW SW section 34-24-37, pay 3,448-53 feet and 3,467-68 feet, total depth 3,490 feet, flowed 193 bbls. of oil in nine hours.

Skelly Oil Co. No. 4 G. W. Sims, C NW NW section 10-23-37, pay 3,510 feet, total depth 3,633 feet, flowed 100 bbls. of oil daily, with 1,000,000 feet of gas.

Continental Oil Co. No. 1-E-17 State, C SE SE section 17-22-36, pay 3,815 feet, total depth 3,842 feet, flowed 4 bbls. of oil an hour through choke, with 6,000,000 feet of gas.

Gulf Oil Co. No. 1 Sticher, C SE SW section 4-22-37, pay 3,675 feet, total depth 3,735 feet, flowed 105 bbls. of oil in 24 hours.

Cities Service Oil Co. No. 6-A Clossen, C SW SE section 6-22-36, pay 3,755 feet, total depth 3,825 feet, flowed 903 bbls. of oil in 19 hours.

Magnolia Petroleum Co. and others No. 1 Hardy, SW SW NW section 29-21-37, flowed 120 bbls. of oil daily from pay at 3,700 feet, total depth 3,776 feet.

Skelly Oil Co. No. 1 Hill, C SW NE section 6-21-37, northwest edge of the Alexander sand pool, was bottomed at 3,870 feet, plugged back to 3,791 feet and flowed 120 bbls. of oil daily through choke, after shooting and acidizing.

Gulf Oil Corp. No. 2 Reeves, C SW NW section 29-20-37, had pay at 3,730 feet, total depth 3,840 feet, was shot and acidized, and pumped 4 bbls. of oil daily.

Great Western Production, Inc. No. 1 Bordages, NW cor. section 33-19-37, pay 3,785 feet, total depth 3,931 feet, acidized, flowed 800 bbls. of oil in 24 hours with 1,000,000 feet of gas.

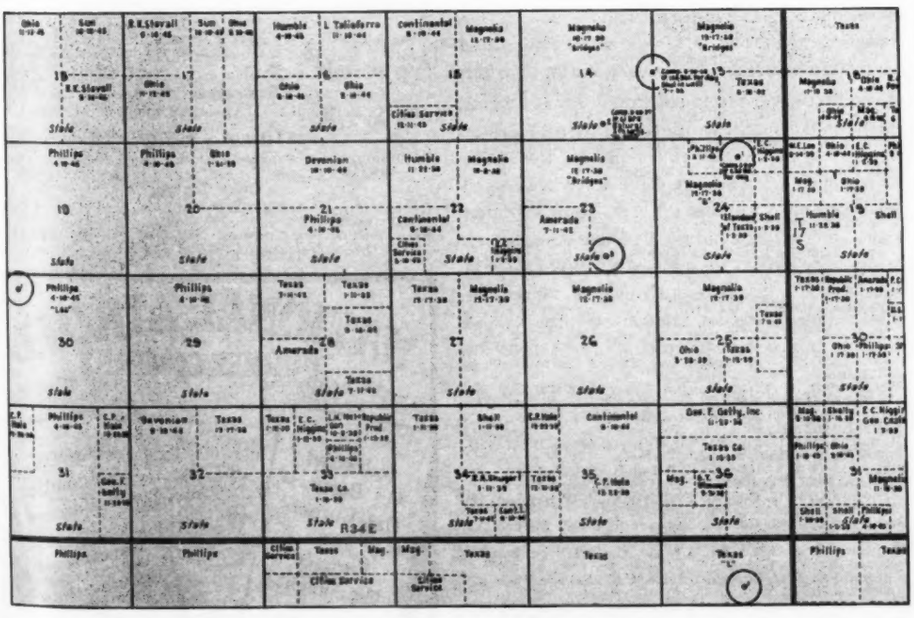
Tide Water Associated Oil Co. No. 4-J State, C NE NW section 17-19-37, pay 3,946 feet, total depth 4,047 feet, flowed 56 bbls. of oil in six hours.

In Eddy County, Murchison & Closuit No. 1-C State, SW SE NE section 16-17-31, topped pay at 3,599 feet, total depth 3,749 feet, plugged back to 3,745 feet and pumped 60 bbls. of oil daily.

Continental Oil Co. No. 1-A-14 Barrett, C SE SE section 14-20-30, was abandoned when 1,600 feet of sulfur water rose in the hole in 30 minutes at 2,274 feet, total depth.

Lea County

Amerada Pet. Corp. No. 6 Byrd, SE sec. 12-20-36. Loc.
Amerada Pet. Corp. No. 1 Hare, C SW SW sec. 33-21-37. Moving in rig.
Amerada Pet. Corp. No. 3 Laughlin, C NW NE sec. 9-20-37. T.D. 2,585 ft.; set 8-in. 2,573 ft.
Amerada Pet. Corp. No. 2-G State, C NW SW sec. 18-19-37. T.D. 4,045 ft.; C.O.
Anderson-Prichard Oil Corp. No. 1 Wells, C SE SE sec. 5-27-37. Drlg. 3,575 ft.
Anderson-Prichard Oil Corp. No. 1 Gregory, NW sec. 33-25-37. T.D. 3,237 ft.; flowing 14 bbls. fluid hourly.
Anderson-Prichard Oil Corp. No. 2 Langlie, SE sec. 8-25-37. T.D. 3,466 ft.; shot; cleaning out.
Anderson-Prichard Oil Corp. No. 3 Langlie, NE sec. 8-25-37. Cellar and pits.
Anderson-Prichard Oil Corp. No. 1-D Langlie, NE sec. 8-25-37. Drlg. 2,790 ft.
Bradley Oil Co. No. 1 Grizzell, C SW NE sec. 5-22-37. Drlg. 1,925 ft.
Cities Service Oil Co. No. 1-H State, C NE NE sec. 17-22-36. T.D. 3,884 ft.; preparing to deepen.
Continental Oil Co. No. 1-B-10 Britt, SW sec. 10-20-37. T.D. 1,260 ft.; set 7⅝-in. 1,252 ft.
Continental Oil Co. No. 6-A-30 Lockhart, NW sec. 30-21-36. T.D. 3,940 ft.; C.O.
Continental Oil Co. No. 2-B-31 Lockhart, C SE SW sec. 31-21-36. T.D. 3,872 ft.; testing.
Continental Oil Co. No. 3-B-31 Lockhart, SE sec. 31-21-36. T.D. 330 ft.; set 12½-in. at 323 ft.
Continental Oil Co. No. 6 Lockhart, NE SE NW sec. 30-21-36. T.D. 294 ft.; set 10¾-in. csg. at 286 ft.
Continental Oil Co. No. 3-A-14 Sanderson, NE sec. 14-20-36. Drlg. 3,230 ft.
Continental Oil Co. No. 3-A-26 State, C SW NE sec. 26-19-36. T.D. 3,797 ft.; set 5½-in. at 3,790 ft.
Continental Oil Co. No. 1-A-30 Warren, C SE NW sec. 30-20-38. T.D. 3,860 ft.; to shoot.
Crandall, Osmond & Maxwell et al No. 1 Maxwell Permit, C SE SE sec. 2-11-36. Drlg. 2,440 ft.
Cranfill & Germany No. 1 Weir, C NE NE sec. 15-20-37. T.D. 4,210 ft.; S.D.O.
Culbertson & Irwin No. 2-A Humphrey, NE NE NW sec. 3-25-37. Drlg. 3,105 ft.
Culbertson & Irwin No. 3-A Humphrey, NE SW NE sec. 3-25-37. Drlg. 1,975 ft.
Emperor Oil Co. No. 1 Johns, C SW NW sec. 24-17-32. Drlg. 3,520 ft.
Empire Oil & Ref. Co. and Repollo Oil Co. No. 2 Brunson, NW sec. 3-22-37. T.D. 3,724 ft.; C.O.
Empire Oil & Ref. Co. No. 1-G State, sec. 2-21-36. T.D. 3,900 ft.; shut down.
Empire Oil & Ref. Co. No. 2-B State, C SE SW sec. 2-21-37. Drlg. 3,850 ft.
J. E. Farrell No. 2-C Walden, C SE SW sec. 15-22-37. Drlg. 3,665 ft.
General Crude and Magnolia Pet. Co. No. 2-C State, SE SW SE sec. 16-23-36. Drlg. 3,638 ft.
Great Western Prod. Co. No. 1 State, SE cor. sec. 16-26-37. Drlg. 460 ft.
Gulf Oil Corp. No. 1 Boyd, sec. 23-22-37. T.D. 3,681 ft.; testing.
Gulf Oil Corp. No. 2 Cole, C NE NE sec. 16-22-37. T.D. 1,141 ft.; shut down.
Gulf Oil Corp. No. 1 Elliott, SW SE SE sec. 15-25-37. Drlg. 3,380 ft.
Gulf Oil Corp. No. 3-C Kutter, NW sec. 18-19-37. Drlg. 2,740 ft.
Gulf Oil Corp. No. 1 Mattern G, C NE SE sec. 18-21-37. T.D. 3,800 ft.; acidized.
Gulf Oil Corp. No. 2 Stuart, C SE NW sec. 10-25-37. T.D. 3,280 ft.; set 6⅝-in. 3,275 ft.



The Vacuum area in Lea County, New Mexico, showing recent extensions to the field. The Texas Co. No. 1 L. State in section 1-18s-34e is an oil well, although not yet completed. The Magnolia Petroleum Co.'s new well in section 14-17s-34e is expected to result in considerable drilling

PETROLEUM PRODUCTION

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The OIL AND GAS JOURNAL

Gulf Oil Corp. No. 1-B White, SE sec. 35-20-36. Derrick.
Homestead No. 1 Clifford, SW sec. 12-26-32. Wildcat; drlg. 4,840 ft.
Humble O. & R. Co. No. 1 Fopeano, C SE SW sec. 25-20-36. Drlg. 3,185 ft.
Humble O. & R. Co. No. 2 Saunders, C NW NW sec. 9-22-34. T.D. 3,177 ft.; setting casing.
Jal Nat. Gas Corp. No. 2 Justis, NE sec. 20-25-37. T.D. 3,029 ft.; testing.
Landreth Prod. Co. No. 1 Grizzell, NE sec. 8-22-37. Drlg. 1,978 ft.
Landreth Prod. Co. No. 2 Grizzell, C SW NE sec. 8-22-37. Cellar and pits.
Mack & Stauffer No. 2 Grizzell, C NE NE sec. 8-22-37. T.D. 3,765 ft.; to acidize.
Magnolia Pet. Co. No. 1 State G, NW NW NE sec. 34-17-34. T.D. 4,905 ft.; P.B. 4,794 ft.
Magnolia Pet. Co. No. 2 State-Bridges, sec. 14-17-34. T.D. 4,593 ft.; F. 51 B.O. in 1 hour, naturally.
Magnolia Pet. Co. No. 3 State-Bridges, C SW SE sec. 23-17-34. Cellar.
J. A. Mascho No. 1 Cloyd, C SE SE sec. 20-22-33. Wildcat; T.D. 1,190 ft.; H.F.W. 1,155 ft.
McDonald & Weiner No. 1 Elliott, SE cor. sec. 19-21-37. T.D. 3,522 ft.; est. 1,000,000 ft. gas.
Mid-Continent Pet. Corp. No. 2 Boren, C SE NE sec. 20-22-36. T.D. 210 ft.; set 12½-in. at 199 ft.
Murray et al No. 4 State Wallace, NW SW NW sec. 3-21-36. T.D. 3,840 ft.; flowing 20 B.O.P.D. while C.O.
National Drlg. & Prod. Co. No. 1 Flint, C NE NE sec. 29-20-34. Wildcat; drlg. 3,653 ft.
Ohio Oil Co. No. 2 Grizzell, C NW SE sec. 5-22-37. T.D. 3,600 ft.; prep. to drill in.
Ohio Oil Co. No. 1 Hardy, NE NE SE sec. 20-21-37. T.D. 700 ft.; lowering 10-in. csg.
Ohio Oil Co. No. 1 Kutter D, C SW SW sec. 8-19-37. Drlg. 3,535 ft.
Ohio Oil Co. No. 7 State-McDonald, C SW SE sec. 16-22-36. T.D. 3,871 ft.; cleaning out.
Ohio Oil Co. No. 9 State-McDonald, SW sec. 16-22-36. Drlg. 3,385 ft.
Phillips Pet. Co. No. 1 Lea, C NW NW sec. 30-17-34. Wildcat; T.D. 4,952 ft.; P.B. 4,762 ft.; bailing.
Plains Prod. Co. No. 1 Humphreys, NE sec. 3-2s-37. Loc.
Plains Prod. Co. No. 1 Stuart, NE SW SW sec. 10-25-37. Drlg. 1,525 ft.
Repollo Oil Co. No. 1 Carter, SW SE NE sec. 8-24-37. Drlg. 3,590 ft.
Repollo Oil Co. No. 1 Cowden, NE cor. sec. 31-23-37. Drlg. 1,338 ft.
Repollo Oil Co. No. 3 Jamison, SW NE NE sec. 21-24-37. T.D. 3,669 ft.; F. 125 B.O.P.D.
Repollo Oil Co. No. 4 Roach, NW NW SW sec. 21-20-37. T.D. 3,875 ft.; swabbing.
Repollo Oil Co. No. 2 Moseley, NE SE SW sec. 34-24-37. T.D. 3,480 ft.; F. 227 B.O.P.D.
Repollo Oil Co. No. 1 White, SE NE SE sec. 35-20-36. T.D. 3,860 ft.; F. 120 B.O. in 20 hrs.
Republic Prod. Co. No. 3 Crosby, SE SE SW sec. 28-25-37. T.D. 3,150 ft.; S.D.O.
Republic Prod. Co. No. 1 Davis, SW cor. sec. 34-23-36. Preparing to spud.
Rowan Drlg. Co. No. 1-A Elliott, SW sec. 27-22-37. T.D. 3,665 ft.; flowing est. 100 B.O.P.D. while cleaning out.
Rowan Drlg. Co. No. 1 Elliott B, C NE NW sec. 9-22-37. T.D. 3,600 ft.; fishing.
Rowan Drlg. Co. No. 2 Elliott B, C NW NW sec. 9-22-37. T.D. 1,200 ft.; waiting on tools.
Rushwold Oil Co. No. 1 Mattix, NE sec. 10-24-37. Cellar and pits.
Samedan Oil Co. No. 3 Hughes, sec. 4-23-27. T.D. 3,631 ft.
Samedan Oil Co. No. 4 Hughes, C NW SE sec. 10-23-37. Rigging up.
Schermerhorn Oil Co. No. 2 Woolworth, sec. 29-24-37. T.D. 3,577 ft.; F. 65 B.O. in 24 hrs.; fishing.
Shasta Oil Corp. No. 1 Woolworth, NE NE NW sec. 28-24-37. Drlg. 3,500 ft.
Shell Pet. Corp. No. 3 Black, SE SE SW sec. 21-24-37. T.D. 2,953 ft.; fishing.
Shell Pet. Corp. and Devonian Oil Co. No. 3 Christmas, C SW NE sec. 21-22-36. Set 9⅝-in. csg. at 1,525 ft.
Shell Pet. Corp. No. 4-E State, C SW NW sec. 12-20-36. Drlg. 3,777 ft.
Skelly Oil Co. No. 5 J. B. Baker, C SE NW sec. 27-22-37. T.D. 3,620 ft.; testing.
Skelly Oil Co. No. 1 Combest, NW NW SE sec. 27-23-36. Moving in machine.
Skelly Oil Co. No. 3 E. Sims, C SE SE sec. 2-23-37. Drlg. 3,468 ft.
Skelly Oil Co. No. 3 G. W. Sims, C NW NE sec. 9-23-37. T.D. 3,642 ft.; cleaning out.
Skelly Oil Co. No. 1-C R. R. Sims, sec. 3-23-37. Drlg. 3,622 ft.
Skelly Oil Co. No. 6 R. R. Sims, C SW SW sec. 3-23-37. T.D. 3,630 ft.; shot; C.O.
Skelly Oil Co. No. 1-E W. P. Sims, C NW NE sec. 10-23-37. T.D. 3,625 ft.; flow, 452 bbls. in 24 hours.
Skelly Oil Co. No. 1 State H, C E half SW NW sec. 25-20-36. T.D. 230 ft.; set 13-in. csg.
Skelly Oil Co. No. 2 State H, C E half NW NW sec. 25-20-36. T.D. 232 ft.; set 12½-in. csg.
Skelly Oil Co. No. 2 Sticher, C NW SW sec. 4-22-37. Drlg. 1,775 ft.
Stanolind O. & G. Co. No. 20-6-A Farnsworth, C SE NW sec. 18-26-37. T.D. 3,146 ft.; P.B. 3,185 ft.; testing.
Stanolind O. & G. Co. No. 8 Gilluly A, C NW SE sec. 24-20-36. Drlg. 3,037 ft.
Stanolind O. & G. Co. No. 9-A Gilluly, C NE NW sec. 24-20-36. Drlg. 3,677 ft.
Stanolind O. & G. Co. No. 12 Gilluly A, C NW NW sec. 24-20-36. T.D. 325 ft.; set 13-in. 276 ft.
Stanolind O. & G. Co. No. 1-B O. J. Gilluly, C NW SW sec. 25-20-36. Set surface csg. at 282 ft.; total depth 314 ft.
Stanolind O. & G. Co. No. 2-A Langlie, C NW SW sec. 9-25-37. Drlg. 1,826 ft.
Stanolind O. & G. Co. No. 1-A Hill, C NW SE sec. 6-21-37. Location.
Stanolind O. & G. Co. No. 1-B Hill, NE sec. 6-21-37. T.D. 324 ft.; reaming.
Stanolind O. & G. Co. No. 2-B Langlie, C NW NW sec. 15-25-37. T.D. 3,458 ft.; P.B. 3,147 ft.; shut in.
Stanolind O. & G. Co. No. 2-A Myers, C SW SW sec. 15-24-37. Cellar.
Stanolind O. & G. Co. No. 3 Meyer A, C SW SE sec. 22-24-37. R.U.R.
Stanolind O. & G. Co. No. 1 State, C SE SE sec. 2-21-36. Drlg. 3,246 ft.
Stanolind O. & G. Co. No. 1 State, C SE SE sec. 16-24-37. Drlg. 2,265 ft.
Stanolind O. & G. Co. No. 1 Thompson, NE sec. 6-21-27. Loc.
W. H. Street No. 2 Wood, C SW NE sec. 22-22-37. T.D. 3,692 ft.; fishing.
Sun Oil Co. No. 6 Akens, C NE SE sec. 3-21-36. T.D. 315 ft.; set 12½-in. csg. 296 ft.
Texas Co. No. 2 Fristoe, NW NE NE sec. 3-25-37. Cellar and pits.
Texas Co. No. 1-L State, C SW NE sec. 1-18-34. Drlg. 3,440 ft.
Texas Pacific C. & O. Co. No. 6-A State, Acct. 2, NE sec. 7-22-36. T.D. 1,550 ft.; set 9⅝-in. 1,533 ft.
Two State Oil Co. No. 1 Atha, C SW SW sec. 31-21-36. Drlg. 3,300 ft.
Williams & Cockburn No. 3 Miller, C SW SW sec. 23-17-32. T.D. 3,880 ft.; S.D.O.

Eddy County

F. E. Baker No. 1 Eddy, NE sec. 12-22-27. T.D. 55 ft.; shut down.
Barnett Oil Dev. Co. No. 1 King Permit, C NW SE sec. 23-26-30. Rigging up tools.
Fred Brainerd No. 2 Brainerd, sec. 5-18-27. Drlg. 1,818 ft.
Ed Bryant No. 1 Stebbins, C NE SW sec. 19-20-29. Drlg. 870 ft.
Carper Drlg. Co. No. 2 Gissler, SW SE NW sec. 23-17-30. Set 7-in. 2,940 ft., T.D.
Cities Service Oil Co. No. 1 State, CSL SW SE sec. 16-17-30. Drlg. 3,055 ft.
T. D. Collins No. 1 Weiler, C NW NW sec. 13-24-36. T.D. 1,970 ft.; P.B. 1,965 ft.; testing.
Continental Oil Co. No. 1 Etz, C NW NE sec. 24-16-30. Drlg. 3,415 ft.
Danciger O. & R. Co. No. 3 Turner, SW NE SW sec. 18-17-31. Drlg. 810 ft.
Emperor Oil Co. No. 3 Puckett, C NE NW sec. 24-17-31. T.D. 3,411 ft.; swedging.
Finley & Cherry No. 1 Buchley, C NW NW sec. 28-16-31. Wildcat; drlg. 1,915 ft.
Flint Prod. Co. No. 1-B State, SE sec. 20-17-30. Drlg. 3,800 ft.
C. J. Frederick No. 1 Reed, C NE SW sec. 28-24-28. T.D. 242 ft.; lowering casing.
F. W. & Y. Oil Co. No. 6-A Gissler, NE sec. 23-17-30. Drlg. 1,715 ft.
F. W. & Y. Oil Co. No. 7-A Gissler, SE sec. 14-17-30. Drlg. 2,170 ft.
F. W. & Y. Oil Co. No. 8-A Gissler, NE sec. 23-17-30. Loc.
F. W. & Y. Oil Co. No. 1-B Gissler, SW sec. 14-17-30. Loc.
F. W. & Y. Oil Co. No. 3 Jackson, C NW SE sec. 13-17-30. T.D. 2,953 ft.; fishing.
Grayburg Oil Co. No. 8 Burch, SE SE NW sec. 19-17-30. Drlg. 2,815 ft.
Grayburg Oil Co. No. 9 Burch, SW NE NE sec. 19-17-30. Drlg. 1,230 ft.
R. L. Holcomb No. 1 State, NW sec. 22-17-28. Drlg. 360 ft.
Woodworth Hawkins No. 1 Mack, C SW SW sec. 20-24-27. T.D. 380 ft.; S.D. for repairs.
C. F. Ingram No. 1 Page, NE NE SW sec. 15-21-28. T.D. 1,140 ft.; S.D.
Nash-Windfohr & Brown No. 4-A Jackson, NE sec. 13-17-30. T.D. 3,380 ft.; S.D. repairs.
Nash-Windfohr & Brown No. 5-A Jackson, NE sec. 13-17-30. Drlg. 1,970 ft.
Nash-Windfohr & Brown No. 4-A Stevens, C SW SW sec. 13-17-30. Drlg. 3,080 ft.
Nash-Windfohr & Brown No. 2-B Stevens, NW sec. 13-17-30. Rig.
Nash-Windfohr & Brown No. 6-A Jackson, SE sec. 13-17-30. Drlg. 810 ft.
Nash-Windfohr & Brown No. 7-A Jackson, SE sec. 13-17-30. Drlg. 1,400 ft.
W. A. Nichols No. 1 Johnson, NE sec. 35-16-21. Wildcat; T.D. 3,697 ft.; P. 20 P.O.P.D.
Premier Pet. Corp. No. 1-E Parker, sec. 22-17-30. Drlg. 3,118 ft.
Repollo Oil Co. No. 2-D McIntyre, NW NE SW sec. 20-17-30. T.D. 3,280 ft.; swb. 40 B.O. in 8 hrs.
Paul Sargent No. 1 State, NE sec. 16-17-31. T.D. 3,749 ft.; P.B. 3,745 ft.; testing.
R. A. Shugart No. 1 Cowethard, C NW SW sec. 35-18-31. Drlg. 3,250 ft.
W. O. Snyder No. 1 Pecos Irrigation, C NE SE sec. 15-25-28. T.D. 1,388 ft.; S.D. repairs.
Weiner & McDowell No. 1 Kerr, C SE NW sec. 3-24-24. T.D. 2,120 ft.; to reset liner.
W. K. Royalty Co. No. 1 State, C SW NE sec. 16-17-31. Drlg. 3,445 ft.
Western Gas Co. No. 1 Cagle, C NW NW sec. 8-26-30. T.D. 1,655 ft.; R.U.R.

Chaves County

English & Harmon No. 11 Billingslea, SE sec. 9-15-29. T.D. 3,545 ft.; P.B. 3,427 ft.; S.D.
E. J. Fisher No. 1 Etz Permit, NE sec. 23-7s-36. M.I.M.
Mathewson et al No. 1 McDonald, C NE NW sec. 19-14-27. Drlg. 640 ft.

Curry County

Bond & Harrison No. 1 Hart ranch, C NW SE sec. 13-2n-31. Drlg. 2,945 ft.

Dona Ana County

Juels C. Bertrand No. 1 Casad Permit, sec. 24-26-5e. T.D. 47 ft.; S.D.O.

McKinley County

S. Dysart No. 1 Government, NE sec. 14-14-10w. T.D. 1,390 ft.; fsg.

Otero County

George Mulvey No. 1 State, SW cor. sec. 11-25-8. T.D. 263 ft.; S.D.
Fred Turner No. 1 Evans, NW NW SW sec. 22-14-12. O.W.D.D.; wildcat; T.D. 3,763 ft.; S.D.

Roosevelt County

C. S. Peterson and Conquistadores Oil Co. No. 1 Good, NW SE SE sec. 28-5s-30. Drlg. 360 ft.

NORTHWEST NEW MEXICO

Bernalillo County

Norins Realty Co., Inc., No. 2 North Albuquerque, NE SE NW sec. 19-11n-4e. S.D. 3,750 ft. for csg.

McKinley County

Guarantee Oil Co. No. 1 fee, NW NW NW sec. 31-20n-9w. Drlg. 300 ft.
S. Dysart et al No. 1 Bouton, CEL NW NE sec. 14-14n-10w. T.D. 1,390 ft.; re-ran 12½-in. to 1,320 ft. and S.D.

San Juan County

Continental Oil Co. No. 64 Rattlesnake, C W½ NW sec. 2-29n-19w. Drlg. 290 ft.
Jack Amenda No. 4 Hart, NW NE SW sec. 25-30n-12w. S.D. 2,048 ft.
Anna Oil Corp. No. 6 Govt., SW NE NE sec. 33-30n-11w. Drlg. 730 ft.

Socorro County

Central New Mexico Oil Co. No. 1 Brown, SE NW sec. 16-3n-1e. Drlg. 1,250 ft.

Valencia County

C. A. Brober et al No. 1 Fuqua, NE NE sec. 19-5n-3e. S.D. 900 ft. to chge. to rotary.
Big Three Oil Co. No. 1 Dailes Townsite, SE SE NW sec. 5-6n-1e. T.D. 6,001 ft.; set whipstock at 5,640 ft.; drlg. by D.P.

COLORADO

Adams County

Oklahoma Oil Co. No. 1 Baxter, C SW sec. 2-3s-66w. T.D 4,368 ft.; C.O.
Glenridge Oil Corp. No. 1 Hills, SE SE SE sec. 27-3s-64w. T.D. 4,345 ft.; R.U. to D.D.

Archuleta County

Prospect Oil Synd. No. 2 Lena M. Garnett, NW SW NE sec. 13-33n-2e. R.U.
Cortez Oil Co. No. 1-A Crowley, NW SE NE sec. 2-32n-2e. Drlg. sh. 260 ft.

Cheyenne County

Brittel Oil, Inc., No. 1 Seip, C NE SW sec. 26-12s-47w. S.D. 300 ft.; 18-in. at 78 ft.; will run 10-in. to 100 ft.; cmtd. and change over to rotary.

Boulder County

J. B. Furstenberg No. 1 Foote, SE sec. 20-1n-70w. T.D. 2,480 ft.; fsg.
Boulder Prod. & Ref. Co. No. 11 Harlow Est., SE NE sec. 36-2n-71w. S.D.O. 765 ft.; dry in Muddy.

Garfield County

Roaring Fork Oil Co. No. 1 Patterson, C NE sec. 36-7s-88w. T.D. 492 ft.; W.O. pipe.

Huerfano County

S. W. Pressey No. 1 Ojo, SW NE sec. 10-29s-69w. T.D. 3,550 ft.; cmtg. through gas flow.
S. W. Pressey No. 2 Alamo, C SW SE sec. 3-27n-68w. Spd.

Jackson County

Colorado Oil Ref. Co. No. 1 North Park Coal, NW NW sec. 18-9n-78w. Drlg. 3,015 ft.

Larimer County

Great West O. & G. Corp. No. 1 Haworth, C SW SE sec. 16-4n-69w. Drlg. 3,620 ft. in top of sd. (Muddy?) S.O.; 6⅝-in. mudded at 3,590 ft.

LaPlata County

N. Spatter No. 1 Bryce, SE SW SW sec. 31-33n-9w. Drlg. 700 ft.; carrying 10-in.

Lincoln County

Consolidated Smelting & Metals Corp. No. 1 Hancock, NE NE SW sec. 7-17s-52w. T.D. 2,860 ft. in r.b.; U.R. 8¼-in. to bttm.
Gulf Oil Corp. No. 1 Smith, C SW SE sec. 19-15s-53w. Drlg. red rck. and anhy. 4,395 ft.

Mesa County

Midwest Drlg. & Dev. Co. No. 1 Callahan, NE NW SE sec. 30-8s-97w. Drlg. 1,990 ft. in dry hole; rng. higher than Continental well 1 mi. to NW.
Continental Oil Co. et al No. 1 Miller, SW SW NW sec. 36-8s-91w. R.U.R.

Moffat County

Morapas Pet. Co. No. 1 Coles, SW SW SE sec. 1-3n-92w. Drlg. 2,135 ft.
Anderson-Kerr Drlg. Co. et al No. 1 Denise, C SE SE sec. 19-9n-99w. T.D. 2,500 ft.; resumed; rng. 10-in. to bttm.

Montezuma County

McElmo Oil Co. No. 1 West, NE NW NW sec. 31-36n-17w. T.D. 3,830 ft.; rmg. at 3,790 ft. to set 4¾-in. on bttm.; making about 3 B.P.D. 45 grav. oil; 830 ft. in Penn.

Morgan County

Swisher et al No. 1 Lunt, SE cor. sec. 3-4n-60w. T.D. 1,718 ft.; fsg. two strings tools and bailer.

Park County

South Park Oil Co. No. 1 State, SE SE SW sec. 16-11s-75w. S.D. 5,705 ft.; for winter.
South Park Oil Co. No. 1 Lemar, NE NE SE sec. 34-11s-75w. T.D. 5,210 ft.; rng. 6⅝-in. to set temp. at 5,170 ft.

Pitkin County

Glenco Dev. Co. No. 1 Govt., NW cor. sec. 9-10s-89w. S.D. 1,040 ft.

Rio Blanco County

The Utah Southern Oil Co. No. 1 H. W. Gray, CWL SW SW section 19-9n-102w, Rangely field, is suspended indefinitely at 1,000 feet, total depth, having failed to encounter oil or gas. Same company's No. 1 Neal, C NW NE section 25-2n-103w, was suspended indefinitely at 700 feet, not having encountered oil or gas in commercial quantities in the shale.

Buford Oil Co. No. 1 Govt., C SW SW sec. 16-1n-91w. Drlg. gr. sdy. L. 1,200 ft.; 10-in. temp. set at 860 ft.
Texas Co. and California Co No. 1 Unit, SW SE NW sec. 35-3n-94w. T.D. 5,933 ft.; rmd. to 4,710 ft.

WYOMING

Albany County

Murphy Oil Co. No. 10 Holst, SE SE NE sec. 13-17n-77w. Drlg. gr. sh. and shells 2,544 ft.
Ohio Oil Co. No. 1 Griffin, C SE SW sec. 2-21-77w. Drlg. 1,811 ft.
Murphy Oil Co. No. 9 Holst, NW SE NE sec. 13-17n-77w. T.D. 3,490 ft.; rng. Schlumberger.
Wyco Oil Co., Inc., No. 1 Chappel, C NE NW sec. 33-21n-76w. T.D. 765 ft.; swbg.; incr. in gas.
Wyco Oil Co., Inc., No. 2 Chappel, NE NE NW sec. 33-21n-76w. Cd. Wall Ck. at 830-58 ft.; tstg. S.O.
Murphy Oil Co. No. 2 Holst-Woolf, NE NW NW sec. 19-17n-76w. Cellar; (first report).

Big Horn County

The Yale Petroleum Corp. has a good well in the Madison lime in its No. 1 Stock-Jones, SE cor. Lot 52 (SW SW SW) section 34-56n-97w, in the Garland field, at a total depth of 4,101 feet. It made 2,880 bbls. per day initially from the lime topped at 3,833 feet.

It looks as though the Ohio Oil Co. will make a producer out of its No. 1 Pryde, C SW SE section 24-56n-97w, on the Byron dome, which is on the edge and running low. It tested the Tensleep at 6,060 feet, total depth, without results and plugged back to a show in the Embar at 5,760 feet. After cementing the 7-inch at 5,727 feet, the hole was acidized. It swabbed 195 bbls. of fluid, 14 per cent water, in 14 hours.

Ohio Oil Co. No. 3 Sidon Canal, NW SW (Lot 40) sec. 24-56n-97w. Bldg. road.
Joan Oil Co. No. 1 Howell, sec. 32-55n-97w (Lot 63). T.D. 1,150 ft.; U.R. 12½-in.
Peay Oil Co. No. 1 Denio, Tr. 43-C, sec. 15-55n-97w. T.D. 3,930 ft.; fsg.

Campbell County

Powder River O. & G. Co. No. 1 Rhodes, NE SE NW sec. 24-49n-79w. Cmtd. 12½-in. at 650 ft.

Carbon County

The Sinclair Refining Co., which last fall started the modernization of its refinery at Parco to handle crude oil developed in the Pennsylvanian pay in the Carbon and Sweetwater counties fields, has completed the improvements. This refinery has had its crude topping equipment revamped and has been supplied with a new "Sinclair 600" cracking still. The design and material were furnished by the Sinclair company, but construction work was contracted.

The Ohio Oil Co., which last week reported the opening of a new gas field in Carbon County, in the Shannon sand at 1,488 feet for 5,000,000 feet of gas per day, has begun the development of the area and has made location for its No. 1 George E. Brimmer, an offset on the southeast of the discovery.

Ohio Oil Co. No. 1 Brimmer, C NW NE sec. 32-27n-89w. Cellar; (first report).
Ohio Oil Co.-California Co. No. 4-B Kyle, C SW SW sec. 24-21n-79w. W.O. rig.
Ohio Oil Co.-California Co. No. 6 Union Pacific-Cronberg, C SW SE sec. 23-21n-79w. Cellar.
Ohio Oil Co. No. 12 H.&C., SE SW sec. 35-20n-78w. Drlg. 2,538 ft.
Sinclair-Wyoming Oil Co. No. 11 Wertz, SE NW NW sec. 7-26n-89w. Drlg. r.b. 5,406 ft.
Producers Oil Co. No. 1, CNL sec. 14-20s-88w. Drlg. 194 ft.
Ohio Oil Co.-California Co. No. 5 Cronberg-U.P., C NW NW sec. 25-21-79w. T.D. 5,643 ft.; cmtd. 7-in. at 5,557 ft.; W.O.C.
Ohio Oil Co. No. 1 Union Pacific, C NW NW sec. 20-21n-80w. Drlg. 5,543 ft.
Ohio Oil Co.-California Co. No. 3-A Kyle, C SW NE sec. 26-21n-79w. T.D. 5,696 ft.; cmtd. 7-in. at 5,626 ft.; W.O.C.
Medicine Bow Oil Co. No. 1 Hintze-Govt., C NE SE sec. 18-22n-78w. S.D. 2,347 ft.

Converse County

John T. Coffee, Jr., No. 1 Mary Gaspar, NW NW SW sec. 25-32n-69w. Spdg.
Ainsworth Oil Co. No. 1 Marberger, NE SE NE sec. 34-32n-69w. Cmtd. 10-in. at 57 ft.
Hail-Thornton et al No. 1 Roth, C NW SE sec. 13-32n-69w. Drlg. 407 ft.
Wyoming Southern Oil Co. No. 1 Lane, C NW NE sec. 27-32n-69w. Spd. and S.D.
Elbe Oil Ld. & Dev. Co. No. 1 Benham, NW NE sec. 5-31-70w. M.I.M.
Tom Carney No. 1 Beaver, SE SE SW sec. 28-35n-68w. M.I.M.
Chadron-Osage Oil Co. No. 1 State, SW cor. sec. 16-32n-69w. S.D. 4,040 ft.; for winter.
Wyoming-Southern Oil Co. No. 3 Salisbury, NE NE SE sec. 27-32n-69w. S.D. 500 ft.; for pipe.

Fremont County

Stanolind O. & G. Co. No. 1 Govt., C SE SE sec. 3-33n-96w. Cg. 1,321 ft.; cmtd. 20-in. at 195 ft.
Sinclair Wyoming Oil Co. No. 2-C Muskrat, NE SW SW sec. 1-33n-92w. T.D. 8,097 ft.; P.B. to 7,555 ft. to test Embar.
H. Kenyon Burch No. 1 Enos, CEL NE NE sec. 28-3n-1w. S.D.O. 970 ft.; no shows.
Ben Stewart No. 1 Darnell, NE SE sec. 26-3n-1w. T.D. 500 ft.; set 8¼-in. at 475 ft.

Hot Springs County

Italo Pet. Corp. No. 1 Phebus-Govt., NW NW SW sec. 11-44n-98w. Drlg. 1,075 ft.

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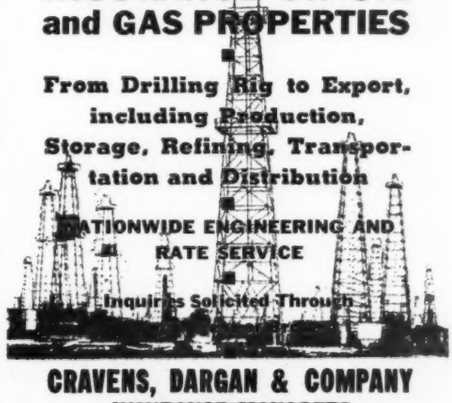

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HOUSTON

Oscar B. Grace No. 4 Govt., CNL SE NW sec. 21-43n-92w. T.D. 380 ft.; fsg. bailer.

Lincoln County

H. M. Eller et al No. 4 Govt., SE NW SW sec. 32-19n-116w. T.D. 401 ft.; will test S.O. in lenticular sd. at 397-401 ft.
Place Oil Co. No. 1 Davis, SE SE SE sec. 9-26n-11w. T.D. 1,228 ft.; set pipe on top sat. zone at 1,212 ft.; tstg.

Natrona County

Stanolind O. & G. Co. No. 11 Wyo. Asso.-Tensleep, C NE NW sec. 35-40n-79w. Drlg. sh. 2,735 ft.
Stanolind O. & G. Co. No. 29 Wyo. Asso.-Tensleep, C SW SW sec. 26-40n-79w. Drlg. sh. 1,234 ft.
General Pet. Corp. No. 1 Govt., C NW SE sec. 21-35n-77w. Drlg. 515 ft.; cmtd. 22-in. at 80 ft.

Niobrara County

The completion of a 2,400-bbl. well on the southwestern flank of the Lance Creek structure last week in the Cobb-Holly No. 2 Novick in the Minnelusa pay outside of the Sundance sand pool was followed this week by a marked increase in activity in that district. The Mackinnie Oil & Drilling Co. No. 2 Thompson, a south offset to the new producer, is rigging up to deepen from the Sundance to the Minnelusa and the J. M. Huber Corp. is moving in tools to deepen its No. 1 Joss, NE SE NW section 6-35n-65w, from the Sundance, where it was completed last year as a small producer, to the new pay. It is on about the same structural contour as No. 2 Novick and two-thirds of a mile to the north. The Huber company also made a location for its No. 1 H. & M. in the NE NE section 8, half a mile out on the southeastern flank from the nearest sand producer. This well will be an important test.

In the meantime tests to the Minnelusa in other parts of the field are at interesting stages. The Ohio Oil Co. No. 1 Leo-OPC-7, NW NW SE section 35-36n-65w, the farthest out of any of the drilling wells and half a mile east of the same company's No. 5 Leo, the 1,800-bbl. well in the Minnelusa which started the new activity, does not look so promising at its present depth of 5,641 feet. It topped the Minnelusa at 5,630 feet and at its present depth it swabbed 10½ bbls. of water in 12 hours with a scum of oil. However, its final chapter has not been written and a little additional depth may change the picture.

The Ohio Oil Co. No. 2 Taylor, nearly a mile southeast of the nearest Sundance well and 1½ miles southwest of No. 5 Leo, is drilling at 6,022 feet in the Minnelusa, but has shown nothing of value so far.

The Continental Oil Co. No. 8 Otto Rohiff, an outside well on the northwest flank, appears to be on the edge of the Sundance production and at 4,025 feet it swabbed 87 bbls. of fluid, of which 5 bbls. was water and the last test showed about 10 bbls. of water and a scum of oil. It may be taken down to the Minnelusa, in which event it would make an important test on the northwest flank.

The Continental No. 1 Leach, East Lance Creek, went directly out of the Lakota into the Sundance without picking up any Morrison. It found water in the Sundance topped at 4,178 feet. The absence of the Morrison indicates that it will run higher than expected in the Minnelusa.

J. M. Huber Corp. No. 1 H. & M., C NE NE sec. 8-35n-65w. Cellar; (first report).
J. M. Huber Corp. No. 1 Joss, NE SE NW sec. 6-35n-65w. T.D. 4,096 ft.; O.W.D.D.; M.I.H.
Ohio Oil Co. No. 9 Putnam, C NE NW sec. 4-35n-65w. Drlg. 1,807 ft.
Lewis Goekel No. 1, NE SE NW sec. 31-35n-62e. Resumed drlg. 1,550 ft.
J. M. Huber Corp. No. 3 Joss, NE NE SW sec. 6-35n-65w. Rng. surf. pipe to 259 ft.
Continental Oil Co. No. 3 Apex-1, SE SE NE sec. 34-36n-65w. Drlg. 4,260 ft.; top r.b. 4,144 ft.; no basal Sundance.
W. A. Maupin et al No. 1 Berggren, NW sec. 23-35n-63w. Rdy. to spd.
J. M. Huber Corp. No. 1-A Lamb, NE SE SW sec. 27-36n-65w. Drlg. r.b. 4,630 ft.
Continental Oil Co. No. 5-B Schuricht, C SW SW sec. 5-35n-65w. T.D. 5,150 ft.; D.P. stuck; fsg.
Ohio Oil Co. No. 2 Taylor-O.P.C.-32, NW NW SW sec. 3-35n-65w. Drlg. Minnelusa 6,022 ft.
Ohio Oil Co. No. 2 Leo-O.P.C., NE NE SE sec. 35-36n-65w. R.U.R.
Ohio Oil Co. No. 1 Leo-O.P.C.-7, NW NW SE sec. 35-36n-65w. T.D. 5,641 ft.; tstg.
Continental Oil Co. No. 1 Leach, SW NE NE sec. 29-36n-64w. Drlg. 4,787 ft.
Argo Oil Co. No. 4 Ford, SW NW SE sec. 33-36n-65w. Cg. 5,957 ft.
Continental Oil Co. No. 8 Otto Rohiff, SW SW SE sec. 31-36n-65w. T.D. 4,025 ft.; tstg.
Continental Oil Co. No. 10 Tom Bell Cattle, C SW NW sec. 34-36n-65w. T.D. 6,256 ft.; P.B. 5,301 ft.; acdzg.
MacKinnie Oil & Dev. Co. No. 2 Thompson, NW NW NE sec. 7-35n-65w. T.D. 4,064 ft.; R.U.R. to deepen.

Park County

Resolute Oil Co. No. 1 Northern Pacific, C NE NW sec. 21-57n-101w. Drlg. Colo. sh. 5,950 ft.
Resolute Oil Co. No. 1 Govt., C NE NE sec. 20-57n-101w. T.D. 8,585 ft.; cmtd. 6⅝-in. at 8,303 ft. with 1,200 sacks.
Ohio Oil Co. No. 15 Woods, O.P.C.-3, NW SE sec. 30-58n-99w. Drlg. 2,483 ft.

Platte County

Dividend O. & R. Co., Inc., No. 1, CSL NW SW sec. 17-24n-66. Drlg. 2,415 ft.; C.D.

Sublette County

Texas Co. No. 3-I, SE NW NW sec. 27-27n-113w. T.D. 659 ft.; cmtd. 8⅝-in. at 678 ft.

Sweetwater County

Italo Pet. Corp. No. 1 Govt., SW SW SW sec. 36-13n-95w. S.D. 610 ft.
Sinclair-Wyoming Oil Co. No. 77, SE NE NE sec. 10-26n-90w. Drlg. 667 ft.
Mountain Fuel Supply Co. No. 1 Union Pacific, C SW SE sec. 13-17n-104w. Recmtd. at 3,330 ft.
Mountain Fuel Supply Co. No. 1 Williams, C NE NE sec. 5-12n-95w. Cg. sdy. sh. 3,066 ft.
Mountain Fuel Supply Co. No. 1 Union Pacific, C SE NE sec. 29-15n-104w, S of Baxter Basin. Loc.

Uinta County

E. A. Ottman et al No. 1 Govt., C SE NW sec. 26-14n-110w. T.D. 1,010 ft.; prep. to run 10-in.

Weston County

Chas. Goodell et al No. 1 State, C NE NE sec. 23-44n-63w. Rdy. to spd.
John Brorphy No. 1 George, SW SE NW sec. 26-48n-64w. Drlg. r.b. 1,120 ft.
Mush Creek Oil Co. No. 1 Carmine, SE SW sec. 31-44n-62w. Drlg. 100 ft.
Le Faivre Oil Synd. No. 1 Martin, NW NW SW sec. 29-45n-68w. Drlg. 2,550 ft.; will U.R. 10-in. at 2,130 ft. for wtr. S.O.

MONTANA

Production of Montana fields in August, as reported by the State Conservation Board, was 545,127 bbls., a decrease of 12,664 bbls. as compared with July. Storage at the end of August was 1,231,050 bbls., a decrease of 54,900 bbls.

Big Horn County

The Daniels Petroleum Co. No. 1 May, C SE SE section 13-1s-33e, in the Hardin field, was abandoned at 4,120 feet, where it had a hole full of water. It was reported to have had a show of oil in the Tensleep at 3,333-87 feet, but was unable to exhaust the water. This area has a number of shallow gas wells which produce at around 500 feet. The No. 1 May was the first deep test to the Pennsylvanian.

E. L. Dana No. 1 Hardy, SW NW sec. 22-9s-35e. T.D. 500 ft. in Claggett; fsg.

Carbon County

R. C. Tarrant No. 1 Heare, CWL NE NW section 14-6s-19e, Fox dome, lost the hole at 1,065 feet and is skidding rig for No. 1-A Heare.

R. C. Tarrant No. 1-A Heare, CWL NE NW sec. 14-6s-19e. R.U.
Miracle Oil Co. No. 2, CWL NE SE sec. 3-6s-23e. Drlg. 1,495 ft.
Ohio Oil Co. No. 16 Kirt, C SE SE sec. 4-7s-21e. Cg. 5,797 ft.
Geo. Muth et al No. 1, CSL SE SE sec. 23-6s-23e. S.D. indef. at 1,500 ft.
Henderson Prod. Co. No. 1-H-11 Elk 11, SE SE NW sec. 35-9s-23e. S.D. 1,626 ft. for 8¼-in.; top Frontier 1,608 ft.; small S.O.
Shaw-Wa Pet. Co. No. 1 Govt., SW SW NE sec. 35-9s-23e, Elk Basin field. R.U.

Choteau County

Security Pet. Co. No. 1 Johnson, NE sec. 23-26n-3e. Drlg. 1,800 ft.

Cascade County

C. Leonard Smith No. 1-A Smith-Schwingle, NE NE SW sec. 14-22n-2e. T.D. 750 ft.; fsg. tools.

Fallon County

Johnson-Burke No. 1 Govt., SE NE SE sec. 6-8n-79e. Drlg. 1,200 ft.

Fergus County

Lewistown Oil Co. No. 1 Parks, C NE NE sec. 13-15n-18e. Drlg. 350 ft.; 12½-in. at 40 ft.
Sam Phillips No. 1 Brakke, NW SE SW sec. 14-15n-19e. Bldg. rig; (first report).
White Top O. & G. Co. No. 1 Govt., C NE SW sec. 35-14n-19e. Drlg. 730 ft.

Glacier County

Disappointing results were obtained in two wildcats in the Cut Bank area. W. E. Ullman No. 1 Allotted, C SW section 35-36n-8w, on the Chalk Butte dome, west of the Cut Bank field, is shut down at 4,357 feet in the Madison. It topped that horizon at 4,355 feet and had sulfur water at 4,357 feet. Elevation is 4,016 feet. Top of the Colorado was at 1,655 feet.

The Home Oil Co. No. 1 Coots, section 1-1-18, just across the line in Alberta, Canada, half a mile north of section 5-37n-5w, was plugged and abandoned at 3,150 feet. It had the Sunburst formation at 3,070-3,120 feet and the top of the Cut Bank at 3,130 feet. It encountered water at 3,150 feet, rising 1,600 feet in the hole. Elevation is 3,955 feet.

There were two completions and no new operations in Cut Bank.

The Indian Oil Co. No. 3 Haglund, Sr., C SW NW section 13-34n-6w, in the old part of the field, swabbed 250 bbls. the first 24 hours at a total depth of 2,874 feet. Oil rose 1,600 feet from the Cut Bank at 2,820-64 feet.

Texas Co. No. 1 Esther Curren, C SE SE section 5-32n-5w, in the southern part of the field, swabbed 195 bbls. the first 24 hours at 2,952 feet, total depth. The 7-inch was cemented at 2,952 feet.
A. B. Cobb No. 1 State, C NE NE sec. 30-37n-4w. Bldg. rig.
Texas Co. No. 8 Tribal-122, CEL SW SE sec. 6-32n-5w. Cellar.
B. V. Hole No. 3 All.-124, SE SW SE sec. 1-32n-6w. Drlg. 425 ft.
Glacier Prod. Co. No. 1 Forbes Unit, C SE NW sec. 4-34n-5w. Drlg. 1,170 ft.; Colo. 305 ft.; 10¾-in. 330 ft.
Glacier Prod. Co. No. 3 Coburn, NE NE NW sec. 8-33n-5w. Drlg. 220 ft.
Glacier Prod. Co. No. 1 Bickett Unit, 2,640 ft. W of E line and 2,480 ft. N of S line, sec. 15-34n-5w. Drlg. 2,190 ft.
Montana Headlight Oil Co. No. 9 Yunck, NE SW NW sec. 1-34n-6w. Cmtd. 8⅝-in. cave string at 2,400 ft.
Lawler-Hoer No. 2 Downen, SW SE SW sec. 9-33n-5w. Drlg. 2,825 ft.
R. C. Tarrant No. 6 Long-Miller, C SW NW sec. 24-34n-6w. Drlg. 2,335 ft.
Drumheller Oil Trust No. 1 fee, C NE SW sec. 17-34n-6w. Drlg. 2,930 ft.
A. R. Pardee No. 1 Anderson, C SE SW sec. 31-32n-5w. S.D. 2,900 ft.

Outside Cut Bank

W. E. Ullman No. 1 Allotted, C SW sec. 35-36n-8w. S.D. O. 4,357 ft.

Hill County

Nadeau Bros. No. 1 O'Neal, NW NW NW sec. 34-32n-17e. Drlg. 1,300 ft.

Judith Basin County

Fletcher E. Hunt No. 3, NW SE NE sec. 30-14n-15e. Drlg. 1,750 ft.

Park County

Ben W. Ryan et al No. 1 Brugess, SE SW NW sec. 28-2s-11e. S.D. temp. 830 ft.

Petroleum County

O. B. Canfield No. 1 Government, CEL SE NE section 21-17n-24e, in the Black Butte district, was plugged and abandoned at 812 feet after testing sands in the Kootenay.

Roosevelt County

John W. Schmidt et al No. 1 Freu, NW NW NE sec 21-28n-50w. Drlg. 700 ft.

Toole County

The Kevin-Sunburst field had two completions and no new operations.

The Rice Oil Co. No. 1 Larson, NW cor. section 18-35n-2w, in the west central part of the field, proved to be one of the best wells of the year. After acidizing and recovering the oil, the well pumped 225 bbls. the first 24 hours from the contact at 1,605-31 feet.

Welch Brothers No. 1 Maggie Ward, C SE NE section 29-35n-3w, pumped 30 bbls. per day from the contact at 1,767-70 feet after acidizing with 500 gallons.

A. E. Crumley No. 11 Fryberger, SE SE NE sec. 24-35n-3w. Drlg. 1,080 ft.
Plotke & Rader No. 11 Fryberger, NW SE SE sec. 29-35n-3w. Drlg. 570 ft.
Fred Munger No. 1 Haggerty, SE NE SE sec. 14-35n-2w. T.D. 1,550 ft.; cmtd. 7-in.; W.O.C.
Wm. M. Fulton No. 2 Thompson, SW SE NW sec. 28-35n-3w. Drlg. 300 ft.
H. F. Patterson No. 2 Elwell, NE SE NW sec. 22-35n-3w. Drlg. 1,730 ft.
Hamilton & Hamilton No. 4 Reeg, SE SW SE sec. 14-35n-2w. Drlg. 400 ft.
Gray Superior No. 4 Aronow, NE SW SW sec. 12-35n-3w. Drlg. 1,460 ft.
Vander Pas & Montgomery No. 1 Thumm, NW SW NW sec. 33-35n-3w. Drlg. 1,570 ft.
Henry Vander Pas No. 1 Ward, SE SE NE sec.28-35n-3w. T.D. 1,742 ft.; contact 1,738 ft.; acd. 500 gals.; tstg.
Treasure State Oil Co. No. 5 Shaw, NW SE NE sec. 35-36n-2w. T.D. 1,585 ft.; Sunburst 1,551-85 ft.; 1,000 ft. oil; swbg.
Guy Smith No. 1 Govt., C NE SE sec. 35-36n-3w. Spd. 10 ft. and S.D.
G. & A. Oil Co. No. 10 Goeddertz, NE SW SW sec. 23-35n-3w. Drlg. 1,605 ft.
Pfabe & Engleking No. 1 Innerberg, NW SE SE sec. 26-35n-4w. T.D. 2,063 ft.; trying to pull 7-in.
M. W. Cassidy No. 1 Mary, CEL NE NW sec. 5-34n-3w. T.D. 1,720 ft.; 400 ft. oil; will acd.
C. T. Olen No. 7 Engemoen, C NW NW sec. 14-35n-2w. T.D. 1,607 ft.; contact 1,591 ft.
C. L. Tomlinson No. 1 Davidson, NW NE NE sec. 28-35n-3w. S.D. 1,500 ft.
E. O. Reickhoff No. 3 Baum, SW SW SE sec. 3-35n-3w. S.D. 110 ft.
California Co. No. 7 Neumann, NW NW NE sec. 23-35n-2w. Drlg. 1,470 ft.
McCurdy No. 1 Hollowell, C SE SW sec. 1-35n-3w. T.D. 1,565 ft.; Sunburst at 1,550-65 ft.; P.B. to 1,550 ft.; 300 ft. O.I.H.
Bryant Bros. No. 1 Lashbaugh, NE SW NW sec. 34-25n-2w. T.D. 850 ft.; R.U. heavier mach. to resume.

Outside Kevin-Sunburst

Model Oils, Inc., No. 1 Fey, NE SW sec. 5-37-3w. T.D. 2,100 ft.; cmtg. off wtr.
Montana Gas Corp. No. 2 Clark, C SE SW sec. 24-37n-1w. Drlg. 750 ft.

Yellowstone County

Riverton Oil Co. No. 1 Fox, CEL NW NE sec. 14-2n-23e. S.D. 1,208 ft. for csg.; 2,000,000 ft. of gas 1,207 ft.
Broadview Dome Oil Co. No. 1, NE NE SW sec. 18-3n-23e. Drlg. 2,804 ft.
Laurel Oil Co. No. 1, C NW SW sec. 7-2s-24e. Drlg. 150 ft.

UTAH

Carbon County

Kelly Young No. 1, NE NE SE sec. 30-14s-10e. Drlg. below 1,100 ft.

(Continued on Page 104)

Texas and Louisiana Gulf

By F. L. SINGLETON

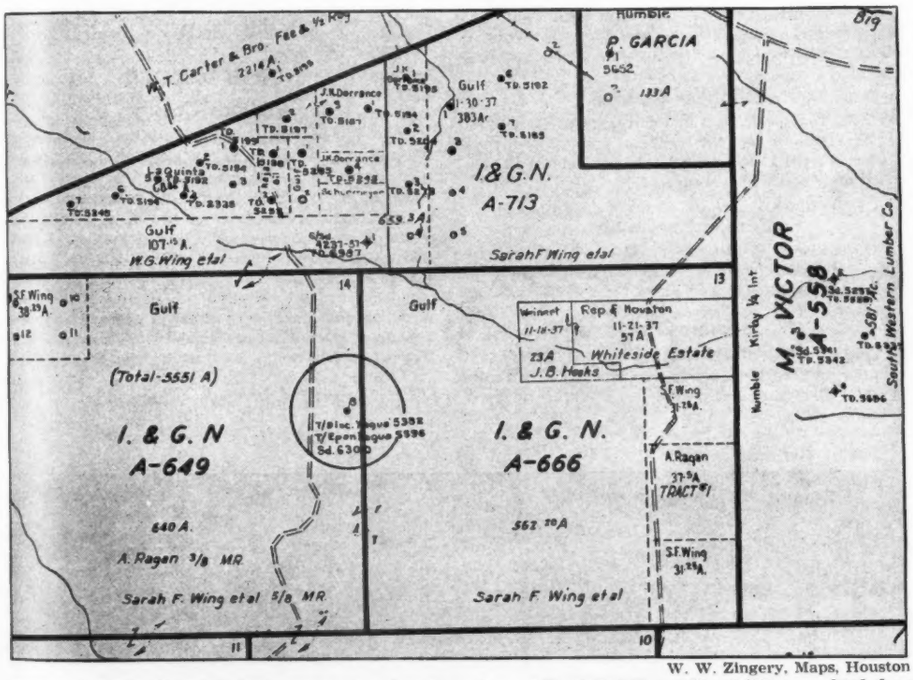
DEEP PAY OPENED IN SEGNO FIELD ON THE CONROE TREND

HOUSTON, Tex., Oct. 11.—Gulf Oil Corp. No. 8 Wing, an outpost test 1½ miles south of the Segno field, southeastern Polk County, was holding the interest of Gulf Coast operators as it prepared to core ahead after testing pipe line oil several hundred feet below the main producing horizon. The hole is bottomed at 6,269 feet, believed to be in the Lower Saline Bayou horizon of the Yegua formation at 5,596-5,601 feet. Gas sand was topped at 6,258 feet, and on a 15-minute drill stem test at 6,257-64 feet it showed 150 pounds of pressure and 640 feet of 44-gravity oil, along with some water, which had a salty taste. Another core was taken, and on a 12-minute drill stem test at 6,258-69 feet, total depth, it showed 125 pounds of pressure, six thribbles of oil and one double of mud and distillate, carrying water, which did not taste salty.

The outcome of this test is particularly important because it is one of the few deep holes that have been drilled where production has been obtained from the Cockfield sand along the Conroe Trend. The majority of wells drilled along this trend have stopped in the Cockfield and until the past few months little thought was given to deeper drilling. With the recent discovery of Spurger, Tyler County, and Villa Platte, Evangeline Parish, both of which are producing from the Cook Mountain pay, a revival of interest is taking place and deeper drilling is in store for the entire trend. Since the Gulf test is just above the Cook Mountain, it is expected to be drilled deeper before casing is run for a production test.

thin sand streaks showing oil at 5,654-55 feet, and sand with streaks of shale showing oil from 5,655-59 feet, the total depth. Seven-inch casing was cemented at 5,645 feet. The well is located about a mile north of production in the A. Horton Survey which is separated from the main part of the field by a dry hole. The main producing horizon is found at approximately 6,050 feet.

On the southwest flank of the old Danbury dome, Brazoria County, Rowan Drilling Co. completed No. 1 Jameson for a flowing well from a shallow sand at 1,970-80 feet. On a 24-hour gauge through a quarter-inch choke it flowed 161 bbls. of pipe line oil, with casing pressure 440 pounds and tubing pressure 210 pounds. This was a projected deep test and it reached a depth of 6,691 feet, where progress was stopped by heaving shale. The well was drilled on acreage formerly held by the Shell Petroleum Corp. who had completed two small pumpers from the same sand.



W. W. Zingery, Maps, Houston

Segno field, Polk County, Texas, showing location of Gulf Oil Corp. No. 8 Wing, which has developed several hundred feet of oil in a drill stem test from a new sand below 6,200 feet

Shallow-Sand Prospect

Prospects of a shallow sand discovery in the Nome field, Jefferson County, were bright as Sun Oil Co. cemented casing in No. 2 Tindall after coring a broken sand and shale section showing oil. Sand and shells with an oil odor were cored at 5,651-54 feet, shale with

In the McFaddin field, Victoria County, Transwestern Oil Co. was preparing to make a drill stem test at No. 1 McFaddin, an old test that was deepened from a depth of 3,509 feet. Sand showing gas was cored at 4,477-99 feet and oil sand at 4,499-4,505 feet. Two drill stem tests failed and a third is being made after the hole was cored deeper. The well is bottomed in the Greta sand and if productive it will open a wide area for development.

In the Kubella area, 1 mile west of production of the Pickett Ridge field, Wharton County, Texas Crusader Oil Co. No. 2 J. F. Kubella perforated casing at 4,570-72 feet and came in for a gas well and will probably be worked over. It is 330 feet northeast of the company's No. 1 Kubella that was originally completed for a wet gasser. In this same area, Gilcrease Oil Co. has rigged up for No. 1 W. W. Duson in the I.&G.N. Survey.

A three-quarter mile south extension to the 6,200-foot sand area of the old Refugio field, Refugio County, was a possibility as Houston Oil Co. No. 35 Rooke showed 110 pounds of pressure and considerable oil on a drill stem test at 6,214-26 feet.

Pearland Oil Co. No. 1 C. H. Alexander, H.&T.B. Survey No. 28, extended the field approximately 1,000 feet north when it flowed 623 bbls. of oil per day through a quarter-inch choke from perforations made in the casing at 6,035-75 feet. There were 11 completions and 10 locations reported for the field. In the same county, and located at the Lockridge field, Gulf Oil Corp. No. 3 Carrie Baker flowed 624 bbls. per day through a quarter-inch choke with tubing pressure 1,750 pounds and casing pressure 1,925 pounds. The hole is bottomed at 6,365 feet and the 7-inch casing was perforated at 6,360-63 feet.

In the Heyser Field

In the Heyser field, Calhoun County, the 5,500-foot sand was extended several thousand feet northwest by the showing of Gulf Oil Corp. No. 1 T. P. Traylor in the J. E. Galban Survey. Bottomed in sand at 5,589 feet with 7-inch casing cemented at 5,585 feet, it flowed 149 bbls. per day through a quarter-inch choke, but due to the high gas oil ratio it has been killed and will be worked over. Humble Oil & Refining Co. No. 16-B P. H. Welder perforated casing in the same sand at 5,581-87 feet and is being worked over after it came in as a wet gasser. This is the third productive sand for the field, being opened several weeks ago by the Normandie Oil Co. Three completions and four locations were reported, Blanco Oil Co. and Buchanan No. 1 Dunwoody, A. Sisneros Survey, perforated casing at 5,487-94 feet and flowed 192 bbls. per day through a 5/32-inch choke. Magnolia Petroleum Co. No. 2 O. M. Lander topped oil sand at 5,740 feet and flowed 31.42 bbls. per day while Humble Oil & Refining Co. No. 19-A P. H. Welder flowed 324 bbls. per day through a three-sixteenths inch choke. New locations included Normandie Oil Co. No. 8 Cook. Humble Oil & Refining Co. No. 18-B P. H. Welder and Blanco Oil Co. and others No. 2 Dunwoody, all located in the A. Sisneros Survey, while Sun Oil Co. has derrick up for No. 3 W. N. Coffey in the J. E. Galban Survey.

Humble Oil & Refining Co. No. 2 Beamer, in the south extension area of the Friendswood field, Harris County, which was purposely drilled into the salt water sand at 6,135 feet, was tested at a plugged back depth of 6,100 feet, and on a seven-hour test it flowed 158 bbls. of fluid through a quarter-inch choke of which 26 per cent was salt water and the hole has been plugged back to 6,070 feet. V. H. Borsodi No. 1 Lena Berlowitz perforated casing at 6,106-14 feet and flowed 192 bbls. per day through a 5/32-inch choke with tubing pressure 540 pounds and casing pressure 790 pounds. It is estimated to be making 6 per cent salt water. Location was made by National Standard Oil Co. for No. 1 Willis Coward near the west bank of Clear Creek in the Perry and Austin Survey.

In the LaBelle field, Jefferson County, Sun Oil Co. was pulling tubing at No. 2 John Ward after it showed for a large gas well at 10,060 feet. The casing pressure built up to 4,200 pounds and the hole will probably be cored deeper. In the North Cheek field, Magnolia Petroleum Co. is preparing to deepen No. 1 Phelan, the discovery well that was completed for a distillate well at plugged back depth of 8,460 feet.

Hardin, Liberty County

Shell Petroleum Corp. No. 1 Cochran, 1,500 feet east of No. 1 Roberts of the Hardin field, Liberty County, was completed from a screen setting at 7,603-16 feet and flowed 707 bbls. per day through a quarter-inch choke. The rig is being moved to No. 2 Hanchey, 330 feet from the east line and 348 feet from the south line of lease in the H. B. Johnston

Survey. Gulf Oil Corp. has made its first location in the field with the staking of No. 1 V. B. Hinson in the H. B. Johnston Survey, while in the northwestern sector Jack Frazier and others have rigged up for No. 1-B Lynott and Buffam in the J. Robeson Survey.

At Cedar Bayou Prospect, Chambers County, Merit Oil Co. No. 1 T. & M. Wright is coring below 7,400 feet and no additional showings have been encountered. It will be cored to the contract depth of 7,500 feet and then plugged back to test the Marginulina horizon where several showings of oil and gas have been encountered. Location is in the Christian Smith Survey.

In the northeastern part of Waller County, J. Bryan Eby and others made location for an interesting wildcat, No. 1 William Rice Institute in the H. Stephens Survey. It is scheduled to be drilled to the Mount Selman horizon, or approximately 8,000 feet. In this same area, Humble Oil & Refining Co. has made location for an interesting core test. It is No. 1-A South Texas Development Co. and is expected to be drilled to around 6,000 feet. During the past several weeks, this company has drilled one other hole along this same trend and it is reported that several other holes will be drilled for correlation purposes.

Quiet in Louisiana

For the first time in several weeks, there were no outstanding developments along the Louisiana Coast, although considerable interest continued to be centered on three wildcats in Lafourche and Plaquemines parishes. In Lafourche Parish, Gulf Oil Corp was drilling cement preparatory to testing No. 3 State, which was plugged back from a total depth of 7,269 feet to 6,971 feet to test a sand section carrying oil topped at 6,958 feet. This well practically assures the opening of a new field due to two drill stem tests that have showed pipe line oil on drill stem tests at intervals at 6,749 to 6,900 feet. In the Raceland area, of the same parish, Amerada Petroleum Corp. is drilling below 7,700 feet at No. 1 South Coast Corp. another prospective pool opener that has encountered several showings of oil at intervals between 7,239-83 feet. Location is in section 34-15s-19e. At Plaquemines Parish on the Quarantine Bay Prospect, Gulf Oil Corp. No. 3 State is drilling in sandy shale below 6,612 feet after coring broken sandy shale showing oil at 6,464-72 feet.

The sixth wildcat to be staked in this sector within the past three weeks was made by the Wheeler Oil Corp. who had derrick up for No. 2 School Land in the northeast quarter of section 16-9s-7w. In the adjoining parish, Jefferson Davis Parish, Continental Oil Co. has abandoned location made last week for No. 11 VanGeffen and has moved the location further north for No. 1 Faye in section 31-10s-3w. In the same parish and located at the South Elton field, Stanolind Oil & Gas Co. and Amerada Petroleum Corp. have made location for No. 3-B Calcasieu National Bank in section 27-7s-3w. It is approximately three-quarters of a mile southeast of the first test that blew out and was abandoned.

Considerable interest is centered on the deep test of Texas Co. No. 1 State Bayou Norman in the Lafitte field of Jefferson Parish which is drilling in shale below 12,053 feet, making it the fourth test in the district to be drilled below 12,000 feet. The well is located several hundred feet from production in section 28. The main producing horizon is encountered in the field proper from 9,400 to 10,000 feet. No. 1 State is drilling deeper after coring oil sand in the main pay at 9,585-9,871 feet.

In the Gibson field, Terrebonne Parish, Shell Petroleum Corp. No. 2 Pelican is bottomed in oil sand at 9,495 feet with 7-inch casing cemented at 9,465 feet. The well is located in section 19-17s-15e. This will be the third producer for this deep seated structure.

A revival of activity around the Anse LaButte field, St. Martin Parish, is taking place as a result of three locations made during the past week. Crusader Petroleum, Inc., is rigging up for No. 1 Central Oil Co. in section 86, and No. 1 Patin in section 46, while the Ansue LaButte Oil Corp. has spudded No. 1 Billeand in section 117-9s-5e.

N. Y.-Penna. Gas Fields

(Continued from Page 94)

ondaga, on the H. Hand farm. Sylvania Corp. cased to 3,868 feet, 30 feet below the top of the Onondaga, on the A. H. Tuttle farm. Belmont Quadrangle Drilling Co. is drilling at 1,480 feet on the L. S. Johnson farm. G. L. Cabot, Inc. cased to 3,887 feet, 18 feet below the top of the Onondaga, on the R. C. Towsley farm. Williamsport Oil & Gas Co. is drilling at 925 feet on the Della Lampson farm. Southwestern Development Co. staked location on the J. Seeley farm. New York Natural Gas Co. is drilling at 2,180 feet on the H. J. Tubbs farm. Hanley & Bird is drilling at 120 feet on the No. 1 E. H. Ackerman. G. L. Cabot, Inc., is drilling at 1,321 feet on the C. Groves farm. Hanley & Bird is drilling at 595 feet on the J. Lobeck farm. Becker and others are drilling at 130 feet on the Fred Sly farm. Cunningham Natural Gas Co. is drilling at 810 feet on the J. J. Johnson farm. Southwestern Development Co. is building rig on the E. G. Husted farm.

New York State Natural Gas Co. is drilling at 485 feet on the A. Schaul farm, Troupsburg Township, another Steuben County test. In the lone operation in Schuyler County, Southwestern Development Co. is cementing casing run to 5,159 feet on the Federal Land Bank farm, Montour Township.

Allegany County is the scene of the remaining three operations in New York state. Fairman and others are shut down at 4,670 feet, on the C. Wilson farm, Willing Township; G. L. Cabot, Inc., is drilling at 3,760 feet on the Thomas Murphy farm, Alma Township, and Southwestern Development Co. has a location on the Johnson Estate farm, Willing Township.

Oklahoma Fields

(Continued from Page 97)

operator's No. 4 Horton, SW NE NW section 8-3n-5w, was an abandoned location.

Gulf Oil Corp. No. 2 Gibson, NE NW SW section 16-3n-5w, an old well, was deepened from 1,810 feet to 1,981 feet, plugged back to 1,835 feet, perforated casing, pumped 5 bbls. of oil and 30 bbls. of water daily and was recompleted.

T. H. McCasland No. 2 Horton, NW cor. section 8-3n-5w, set 6⅝-inch casing at 1,467 feet, total depth, and was waiting on cement. Same operator's No. 4 Horton, NE NW NW section 8-3n-5w, had dug cellar and pits.

Stephens County

C. W. Tomlinson No. 2 Montgomery, NW NW NW SE section 11-2s-8w, an old Stephens County, well, was deepened from 1,504 feet to 2,049 feet, pumped 40 bbls. of oil daily and was recompleted.

Comanche County

Clyde Rhodes No. 1-A Green, SE SE SW section 2-1n-13w, Comanche County, was reported abandoned at 15 feet, total depth.

Jackson County

Gulf Oil Corp. No. 2 Burrow, SE NE NW section 6-1s-19w, Tipton area, Jackson County, had Granite Wash at 2,497-2,520 feet, total depth 2,612 feet, plugged back to 2,600 feet and was completed as an 18-bbl. pumper.

Cotton County

Claud Parson and others No. 1-A Marsh, SW SW NW section 19-1s-9w, Cotton County, was dry and abandoned at 2,210 feet, total depth, in shale.

Other New Operations

In Kay County, E. J. Shaffer and others No. 1 Onstott, NW NW NE section 17-28-1w, was a location. L. H. Wentz No. 3 Andrews, NW SW NE section 8-28-1w, was building rig and moving in tools.

In Logan County, Texas Co. No. 1 Roper, C W half SW SE section 22-15-1e, was location for a wildcat in the southeastern corner of the county.

In Oklahoma County, Southwest Petroleum Co. No. 1 Trosper, NE NE SE section 35-12-3w, was a rig.

In Hughes County, C. E. Davis and others No. 1-A Williams, NE SE SE section 36-9-8, was a location.

In Jefferson County, Bridwell Oil Co. No. 3 Seay, NW NW NE section 10-7s-5w, was drilling at 70 feet.

Rocky Mountain Areas

(Continued from Page 102)

Daggett County

Mountain Fuel Supply Co. No. 1 Smith, C SW NE sec. 30-3n-24e. Drlg. 4,143 ft.

Grand County

Utah Southern Oil Co. No. 1 Hyde, SE NW NW sec. 33-22s-22e. S.D. 6,715 ft.; M.I. heavier rotary equip.

Columbia Crude Corp. No. 1 Rath, NW SW SE sec. 12-25s-20e. Drlg. 2,334 ft.

Cane Creek Oil Co. No. 1 Govt., NW SW sec. 31-26n-21e. Drlg. 350 ft.

NEBRASKA

Sioux County

J. M. Huber Corp. and United Producers, Inc., No. 1 Morgan, C SW SW sec. 32-35n-56e. Drlg. 3,030 ft. in Upper Sundance.

NORTH DAKOTA

Williams County

The California Co. is spudding in on a deep test on the Nesson anticline in its No. 1 Kamp, C NW NE section 3-154n-96w, where it has a block of 110,000 acres leased up by Waldo E. Rennie, of Denver, and turned to that company. The structure lies 15 to 20 miles east of the town of Williston and on the north and south sides of the Missouri River. The anticline has features similar to the Baker-Glendive anticline in eastern Montana and the objectives will be the same, the Pennsylvanian and lower beds, although not quite so deep. The Fort Union beds are at the surface. Manning & Martin, Inc., have the contract.

California Co. No. 1 Kamp, C NW NE sec. 3-154n-96w. Cmtd. 20-in. at 80 ft.

New diesel pumping station of Continental Pipe Line Co. near Edmond, Okla.: Eight-cylinder, 350-hp. diesel, 600-r.p.m., 3,600-r.p.m., six-stage pump-rated capacity, 20,000 bbls. per day, 650 pounds line pressure

Michigan Field Report

RECORD-BREAKING YEAR IN MICHIGAN OIL DEVELOPMENT

By O. C. PRESSPRICH

SAGINAW, Mich., Oct. 11.—Indicative of the steady and rapid growth of Michigan's oil development, with assurance that 1937 will establish a new production record for the state, is the announcement by the state conservation department that drilling permits issued so far this year exceed the total for 1936, the biggest previous year.

Issue of 21 permits in the week ending October 6 brought to 780 the 1937 total of drilling licenses issued. Last year's 12-month total was 777. With nearly three months yet to go, it is expected 1937 will show a permit total close to 1,000.

This shattering of the annual record for permits rather overshadowed the week's developments in the oil fields themselves, for the week produced nothing of a spectacular nature in any of the state's 14 fields. As usual, Gladwin County, site of the rich Buckeye field, led the permit list with nine drilling licenses. Most of them were for wells in or on the borders of the Buckeye territory. Next in line was Allegan County with seven permits, issued for drilling in or near the new Salem field. The remaining five permits in the week's list went at the rate of one apiece to Isabella, Midland, Montcalm, Ogemaw and Washtenaw counties, the latter the site of the University of Michigan and far from any successful oil development anywhere in the state.

Actual field operations were of only mediocre interest, though several new producers were added on inside locations in both the north and south pools of the Buckeye field. An eastward trend was apparent in the north (Wicklund) pool and a gradual south trend development appeared in the so-called midway area, tending further to close the gap between it and the south (Oard) pool.

Fringe or boundary tests in the two pools attracted whatever interest was apparent, although the week was noticeably devoid of heavy producers. All producers reported were light and below the previous accepted average established for their localities.

North (Wicklund) Pool

Buckeye "reversed its field" this past week to travel eastward after a showing last week of dry holes marking the western boundary of the north pool. Several small producers are now developing to extend the territory to Buckeye's eastern edge and over into Hay Township. Just to prove, however, that the previous week's dry holes on the western and northwestern edges of the north pool were bona fide warnings, another dry one came in on Sun Oil Co. No. 1 Henderson, NE NW SE section 4, a far northwestern outpost. Eastward from the dry test, in section 3, considered the north boundary of the pool, two wells came in favorably. Turner Petroleum Co. No. 2 Schranz, SW SE SE section 3, reported a 300-bbl. natural flow, while Wicklund Development Co. No. 3-K State, NE SW SE section 3, reported 500 bbls. These two wells were accepted facts with the industry, however, as other tests in the same section have proved up.

In major eastward development were three eastern boundary tests, all with small to fair production, which, however, indicated a favorable pocket of oil. Ralph LaBlanc No. 1 Campbell, SW SE NE section 12, most easterly of the lot, and on the edge of Buckeye Township, came in with 60 bbls. daily. The well is 10 locations east and four north of the Wicklund discovery well. American Drilling Co. No. 3 Solden, NE SW NE section 12, one location west and three south of the LaBlanc-Campbell well, proved another eastern extension, with a reported gauge of 150 bbls. daily. C. W. Teater No. 2 Adamets, NW SW SW section 12, was completing with a fair show of oil, being the third eastern extension test. Other north field developments, which proved little, included Daily Crude Oil Co. No. 4 Jacob, NW SW SE section 10, which was a southwest test in the north pool with a small showing; Socony-Vacuum Oil Co. No. 5 Daily, SW SW NE section 12, with 75 bbls. daily, and several developments of Sun Oil Co. other than its dry hole northwestern test in section 4. Among Sun's developments were: No. 6 M. Strohkirch, SE SE NW section 9, small show, and scheduled for acid; No. 2 Card, SW SE NW section 10, with 400 bbls. daily after acid; No. 3 Card, SW SW NW section 9, made 100 bbls. daily naturally, and will be treated; No. 4 Ockerman, NW NE SW section 10, which developed 250 bbls. naturally, then declined to make a 150-bbl. pumper; No. 5 Ockerman, SW NE SW section 10, showed 2,500 feet of oil in the hole, and was scheduled for treatment and the pump; No. 8 Salla, SW SW SW section 11, swabbed 150 bbls. and was to be treated.

South (Oard) Pool

Practically all south pool development of more than usual interest points to the gradual merging of the so-called midway pool and the south pool proper. Topping the list of south pool developments the past week, which carried out this trend, was M. L. Jorgensen No. 1 Foster, NE NE NW section 26, a 300-bbl. daily producer. Its favorable production opened up several locations which will further cement the bond between the midway and south pools. The Jorgensen-Foster well is four locations south of Hanners Development Co. No. 1 Armstrong, "tattle-tale" well of the midway pool, in section 23. What may be termed a midway pool development, being an eastern offset to Hanners No. 2 Armstrong, was Smith Petroleum Co.-Beaver Trust No. 1 Wooding-Chovich, SW NW SE section 23, which developed a natural production of 50 bbls. daily. With the Jorgensen-Foster well lying to the southwest a favorable producer, both southeast and southwest development is indicated for further tests of the midway pool. North and northwest development from the Hanners "tattle-tale" was temporarily halted by dry efforts. R. F. Voorheis No. 2 Ludwig Buehler, NW NW NE section 26, drilled in and completed another cementing link between the midway and south pool proper. It is estimated to be good for 400 bbls. per day, or more.

Gordon Oil Co. completed two wells in the south pool, its No. 3 Roy Trego, NW SE NE section 35, coming in at 40 bbls. naturally, while its No. 2-C State, SW NW SE section 36, developed 100 bbls. daily production to complete a north and south tier of favorable developments which extends up to section 23, the midway pool discovery site.

Gladwin County—Tobacco Township

Southward from the Oard pool in Buckeye, development continued favorable this past week, with Gladwin-Buckeye Corp. No. 1 Johnson, NE NW NW section 1, netting 150 bbls. daily natural production. The test was considered one of the best in the territory, and strengthened hope of further testing in the vicinity.

Gladwin County—Hay Township

As production went eastward from the north (Wicklund) pool in Buckeye it extended into Hay Township, where two tests were being closely watched by operators. One was F. C. Stover No. 1 Knight, SE NW SW section 16, which developed 50 bbls. daily. The other was Dibble Bros. No. 1 Kimball, SW NE NW section 16, which made a favorable show of oil and gas, and was being deepened. Both tests are relatively important to determine the eastward extension of pay strata from the north Buckeye field.

Midland County—Warren Township

Possibility of an oil boom loomed in the vicinity of Coleman, long considered risky territory but with some possibilities, as a wildcat of the Mammoth Producing & Refining Co. NW NW SW section 9, was scheduled to reach the Dundee stratum. The test has logged favorable indications as to depths—enough to warrant Mammoth in taking a chance at proving up the territory. Lease men are reported to have been active recently in the north and east territory surrounding Coleman, and other tests are indicated soon. The Mammoth wildcat is 2 miles north of Coleman.

Isabella County

Focal point of interest for the past few weeks in the Michigan field was Boston Oil & Gas Co. No. 1 Clara Fox, NE NE NE section 23, Nottawa Township, is still reported as testing after favorable indications. Operators are understood to be in no hurry to bring in the well until certain leases in the vicinity are closed. C. E. Cotter No. 1 well, NE NE NE section 11, also was being closely attended after being down 3,500 feet and running 30 feet lower than the Fox well.

Pure Oil Co. developed two producers with its No. 4-B McClintoc, SE SE SW section 33, Sherman Township, producing 400 bbls., naturally, while the 6-B McClintoc, SE NW SW section 33, showed 350 bbls. daily.

Union Township

With dry holes surrounding its location, J. G. Zabel No. 1 Kennedy, NW NW NE section 25, Union Township, is looked to as the center of a supposedly dry area, and operators are showing much interest in the wildcat.

Arenac County

Favorable production was recorded by two Clayton Township wells the past week after acid treatment. Michigan Devonian Co. No. 1 State, NW NW SW section 11, Clayton Township, responded with a flow of 100 bbls. daily, and Great Western Petroleum Co. No. 2 McKay, NE NW SE section 10, made slightly better than 100 bbls open flow.

Development in the Arenac area is moving forward steadily, with edge tests on several fronts reporting favorable structures. Low prices on crude oil from this area have curtailed exploration and development to some extent, operators say.

Southwest Texas Fields

(Continued from Page 98)

Hicks cored sand at 3,657-70 feet in the Hockley, and recovered 180 feet of oil and mud at 80 pounds working pressure. Operators are running an electrical survey.

Ivan W. Howard has a show in his No. 1 Moczygemba, a Karnes County wildcat located 1¾ miles southwest of Falls City, has encountered an oil show. Top of the sand showing oil was cored at 2,159 feet, and saturation was found at 2,174-78 feet. Total depth of the test is 2,178 feet, and operators were last reported reaming down to 2,131 feet to test.

Benavides Development

The Benavides or North Sweden field of Duval County is at present the most rapidly developing field of Southwest Texas. With 17 wells drilling in the field over a wide area, the Benavides pool seems due for a long-time boom. During the past week, nine oil wells were completed, making a total initial production of 1,615 bbls. daily, and bringing the field's well total to 72.

Included in the new wells was Russ Petroleum Co. No. 1 Rossi, which establishes production on the southwest part of the field, several locations from the former edge of production.

Canadian Fields

Completions and Operations in Northwest and in Ontario

By VICTOR LAURISTON

CHATHAM, Ontario, Oct. 9. — On the west flank of South Turner Valley, Share Royalties No. 1, N half LSD 8, section 29-18-2w5, bottoming in the Madison limestone at a reported depth of 7,309 feet, has blown in with what looks like the largest production yet encountered in Turner Valley. Production is expected to exceed 2,000 bbls. a day, though early unofficial estimates placed it close to 3,000 bbls. It is definitely in a class with the larger Turner Valley wells, though larger gas flow and heavier rock pressure, exceeding 2,000 pounds, are indicated.

The oil was flowing through 6⅝-inch casing, it being impossible to run tubing till the flush production was blown off.

Share No. 1 offsets B. & B. Oil Co. No. 1 about a quarter mile to the west and a little south. The oil is a high-gravity green crude, somewhat heavier than production from the earlier crude wells farther east. It is the first completion in section 29, and indicates the main body of crude lies down the flank to the west of the earlier discoveries.

West Flank Producers

Among the recent completions, Davies-Royalite No. 2, LSD 13, section 21-18-2w5, is maintaining a steady flow of close to 1,400 bbls. a day on 65 per cent proration, with natural flow of 2,000 bbls. Previous to completion of Share Royalties No. 1, Davies-Royalite No. 2 was the largest producer in the field.

In the southwest extension, Brown Oil Corp. No. 1, LSD 14, section 16-18-2w5, finished 470 feet in the Madison lime at 6,814 feet, is estimated good for 400 to 450 bbls. natural flow. It will probably be acidized. Brown No. 2, LSD 8, section 20-18-2w5, has cleared itself of fluid and is estimated between 500 and 600 bbls. It finished around 7,002 feet, after getting the Madison at 6,527 feet.

In the west-central area, Mercury Oils No. 8, LSD 3, section 4-19-2w5, finished 486 feet in the Madison at 5,986 feet, has cleared itself of fluid and is testing production. It appears to be a naphtha producer, with considerable wet gas.

Tests in the Lime

On the west flank, Model-Spooner-Reward No. 1, LSD 4, section 28-18-2w5, which got the lime at 6,461 feet, discontinued drilling at 6,930 feet and is testing production. In the same section, Four Star Petroleum No. 1, LSD 13, offsetting Turner Valley Royalties No. 1 producer, is below 6,769 feet after getting the lime at 6,640 feet and cementing casing at 6,647 feet. Three Point Petroleums No. 1, LSD 12, got the limestone at 6,562 feet and is cementing.

In section 29-18-2w5, Granville Oils No. 1, LSD 16, offsetting Turner Valley Royalties No. 1 to the west, finished drilling at 7,321 feet after getting the Madison at 6,857 feet. It is bailing and testing production. Farther west, Commoil No. 1, LSD 15, same section, got the lime just above 7,000 feet, a record for Turner Valley, and is preparing to drill into production after cementing casing at 7,020 feet. National Petroleum Corp. No. 1, S half LSD 8, same section, offsetting Share Royalties No. 1 big producer a little to the south, got the Madison at 6,786 feet and cemented casing at 6,805 feet. It will be completed in the lime with standard tools.

In the southwest extension, Prairie Royalties No. 1, LSD 16, section 17-18-2w5, is below 6,916 feet after getting the Madison at 6,830 feet and cementing casing at 6,845 feet. Location is half a mile west of Brown Oil Corp. No. 1, LSD 14, section 16-18-2w5, and the lime was 486 feet deeper. It is the farthest west drilling in this portion of the west flank.

In section 32-18-2w5, Royal Crest Petroleums No. 1, LSD 9, is preparing to resume after cementing in the top of the lime at 6,665 feet. It got the lime at 6,654 feet, about 200 feet deeper than anticipated.

With a total of three wells testing production and eight more drilling in the lime, the month of October should establish a record for new production. Several other tests are nearing the Madison, and may be completed this month.

New Tests Starting

In section 21-18-2w5, Brown Oil Corp. No. 4, LSD 4, is working on cellar. Location is just south of Foundation Royalties No. 1 and west of West Side Royalties No. 1, both crude producers. The test will spud this month.

In the same section, Bersac Royalties No. 1 has been located in LSD 12, immediately south of Davies-Royalite No. 2 producer. The test will be financed jointly by British American Oil Co., Security Assets, Ltd., Calmont Oils, Newell & Chandler and Charles C. Ross. Work has been started on location and the test will likely spud this month.

In section 19-18-2w5, Scottish Petroleum No. 1, LSD 16, has spudded. This is the first test to be undertaken in section 19, and is on acreage of Calgary & Edmonton Corp. The location is about 1¼ miles west of Davies-Royalite No. 2 producer. Union Drilling Co. is handling the contract.

In the far south end of the field, Mid-Royal Oils No. 2, LSD 3, section 9-18-2w5, is working on derrick. This the first active well south of the Highwood River.

North Turner Valley

Home Oil Co. No. 1 Millarville, LSD 8, section 33-20-3w5, is in the Lower Blairmore below 6,369 feet and expected to get the lime within a few days.

East Side Drilling

On the New Valley structure, northeast of Turner Valley, McLeod Oil Co. No. 1, LSD 4, section 6-21-2w5, is fishing at 8,462 feet.

On the Calling Valley structure, Sentinel Oil Co. No. 1, LSD 1, section 8-20-2w5, is deepening after cementing casing at 5,850 feet.

Turner Valley Production

Of the Alberta crude production of 271,898 bbls. in August, some 268,251 bbls. represented Turner Valley limestone production, most of it light crude from the west flank wells drilled since Turner Valley Royalties No. 1 discovery well was completed in June, 1936. The major producing unit in the field is now the Royalite Oil Co. Sterling Pacific group whose Nos. 3, 4 and 5 wells delivered 82,215 bbls. of crude. Royalite Oil Co. ranked second with 39,799 bbls., largely naphtha. Among individual producers, Sterling-Pacific No. 5 was probably the largest, though detailed figures were not given. Turner Valley Royalties No. 1 produced 29,618 bbls. for the month, B. & B. Oil Co. No. 1 produced 22,771 bbls. and Monarch Royalties No. 1, a new completion, delivered 19,228 bbls. Among the newer wells, Richland Royalties No. 3 produced 5,970 bbls. Units producing over 10,000 bbls. for the month included West Side Royalties No. 1, with 13,184 bbls.; Foundation Royalties No. 1 with 12,031 bbls. and the Mercury-Miracle group with 10,330 bbls. The average daily production for the field in August was 8,803 bbls.

Tests in the Foothills

On the Moose dome, west of Calgary, Moose Oils No. 2, LSD 8, section 29-22-6w5, bottoming in the Devonian limestone at 1,552 feet, produced around 25 bbls. a day on a pumping test. It has 16-inch hole to bottom and will be drilled deeper. Moose No. 1, a half mile farther north, indicated four possible pays before the 3,000-foot horizon is reached. Model Oils No. 1 Moose, LSD 16, section 30-22-6w5, on the west side of the structure, has started work on location.

On the Kootenay dome, Roxana Petroleums No. 1, section 8,24-7w5, is in hard formation below 3,410 feet, more than 305 feet in the Devonian limestone, with about 1,000,000 feet of gas. Norcon Oil Co. is preparing for a test on the same structure.

On the Highwood-Sinclair structure, southwest of Turner Valley, Green Valley Oils No. 1 Banner, LSD 6, section 34-17-3w5, is below 3,540 feet. Additional gas was struck at 3,458 feet and 3,465 feet with considerable naphtha content.

Hunter Valley Test

In the Forest Reserve area west of Olds, Hunter Valley Oil Co. No. 1 McLaren, LSD 12, section 13-31-10w5, is below 8,274 feet and will shortly make a production test. The well is apparently in the Fernie shale formation, and numerous oil and gas shows have been encountered that were not met in that horizon in Turner Valley. Rock pressure at this depth is estimated at 5,500 pounds.

Proration Plan for Turner Valley

A basis on which Alberta government engineers are requested to make tests of new and acidized wells to determine the potential capacity, as a basis for 65 per cent proration, has been approved by representatives of the Petroleum Producers Association, Imperial Oil and British American Oil Co. The basis is as follows:

"1. New wells shall be produced at their maximum capacities for a period of six days after being placed on production and the production for the seventh day shall be deemed the potential on which proration, where applicable, shall be based, and for the purpose of testing, a well shall be considered to be on production when the ratio of oil to drilling fluid exceeds 80 per cent and the well shall be tested every thirtieth day thereafter for a period of 90 days; thereafter every succeeding 90 days. Before each test, subsequent to the initial test and any acidation test is made as outlined, wells shall be operated at maximum point of production for a period of three days. The same procedure as any initial test shall apply whenever any well is acidized.

"2. It being understood that the proration allowance applied to the well for the first 30 days following any test shall be reduced by any amount sufficient to offset the excess production over that allowed by proration during any test period.

"3. Old wells, except when same may hereafter be acidized, shall be tested every 90 days after the first test thereof which first test shall be made as soon after this date as convenient to the government and the production so found on each test shall be deemed the potential for such wells respectively. In the case such old wells are hereafter acidized the procedure shall be the same as that prescribed for new wells. For the purposes of this resolution old wells are wells that have been in production for 90 days or more.

"4. Unless the marketing situation becomes so acute that it is necessary to prorate all wells, all wells which produce under government test 75 bbls. or less per day shall not be subject to proration.

"5. For the purposes of this resolution, 60 degrees gravity oil or less shall be considered crude oil."

Photographed in the Turner Valley field in Alberta was this group, comprising J. E. Miller, Oil Well Supply Co.; R. H. Molley, Hughes Tool Co.; G. W. Boller, drilling contractor, and O. Brechtel, Parkersburg Rig & Reel Co.

WILDCAT OPERATIONS

CALIFORNIA

IMPORTANT WELLS AND NORTHERN CALIFORNIA WILDCATS

Company, well and location—	S. T. R.	Depth	Status—
Shell Oil, No. 2-2 Capitan, Santa Barbara Co.	32- 5-30	2,993	pump. 35 b.d.
Hancock-Bush, No. 2-H Santa Maria, Santa Barbara	30-10-33	4,503	flow. 1,500 b.d.
Pet. Prop., Inc., No. 1-R Santa Maria, Santa Barbara	19-10-33	1,671	sd. sh. drlg.
Sed Oil, No. 1 Mills, Santa Maria, Santa Barbara Co.	27-10-34	4,422	sd. sh. drlg.
Moore, E. H., No. 2 Sugar, Santa Maria, Santa Barb.	19-10-34	4,600	gr. sh. drlg.
Ohio Oil, No. 2-M Santa Maria, Santa Barbara Co.	21-10-34	3,560	sd. sh. drlg.
Union Oil, No. 4 Vincent, Santa Maria, Santa Barbara	30-10-33	3,470	O.S. drlg.
Union Oil, No. 2 LeRoy, Santa Maria, Santa Barbara	24-10-35	5,309	sd. sh. drlg.
O'Donnell, J. E., No. 1 Santa Maria, Santa Barbara Co.	21-10-34	1,940	sd. sh. drlg.
Pac. Western Oil, No. 2 Santa Maria, Santa Barbara	21-10-34	4,132	pump. 110 b.d.
Pac. Western Oil, No. 4 Santa Maria, Santa Barbara	27-10-34	1,782	sd. sh. drlg.
Rice Ranch Oil, No. 4 Orcutt, Santa Barbara Co.	23- 9-34	4,330	P.B. 3,732
101 Oil, No. 1 Pt. Concepcion, Santa Barbara Co.	35- 5-33	3,206	showed gas
Tide Water A. O., No. 1-L Santa Rita, Santa Barbara	3- 6-33	4,000	hd. sd. drlg.
Hancock Oil, No. 2 Los Alamos, Santa Barbara Co.	6- 7-32	6,390	hd. sh. drlg.
Field, O. C., No. 1-S.R., Lompoc, Santa Barbara Co.	11- 7-33	3,358	swabbing
United Western Oil, No. 1 Los Olivos, Santa Barbara	15- 7-30	2,008	sd. sh. drlg.
Del Mar Oil, No. 1 Summerland, Santa Barbara Co.	16- 4-26	4,163	idle
Pet. Securities, No. 6 Ranch, Shiells, Ventura Co.	3- 3-19	3,867	sd. sh. drlg.
Texas Co., No. 133 Shiells, Ventura Co.	4- 3-19	4,128	cleaning out
Texas Co., No. 134 Shiells, Ventura Co.	4- 3-19	2,931	sd. sh. drlg.
Union Oil, No. 16 Bardsdale, Ventura Co.	12- 3-20	6,740	O.S. drlg.
Richfield Oil, No. 1 McFarland, Camarillo, Ventura	13- 2-21	4,631	hd. sh. drlg.
Condor Oil, No. 1 Sespe, Ventura Co.	6- 4-19	2,193	rig. to pump
Ivers, H. A., No. 14 Star, Sespe, Ventura Co.	1- 4-20	1,502	cleaning out
Williamson Oil, No. 1 Sespe, Ventura Co.	1- 4-20	410	hd. sd. drlg.
Section 20 Oil, No. 1 Sespe, Ventura Co.	20- 5-19	365	sd. sh. drlg.
Speik Oil, No. 2 Sespe, Ventura Co.	33- 5-19	3,177	sd. sh. drlg.
Colima Oil, No. 2 Sespe, Ventura Co.	25- 5-19	3,430	sd. sh. drlg.
Topa Topa Oil, No. 3 Sespe, Ventura Co.	33- 5-19	4,402	sd. sh. drlg.
Commander Oil, No. 7-F Piru, Ventura Co.	13- 4-19	286	sd. sh. drlg.
Skyline Oil, No. 1-H Hopper Canyon, Ventura Co.	13- 4-18	1,015	sd. sh. drlg.
Val. Giovani, No. 1 Ojai, Ventura Co.	4- 4-21	1,762	hd. sh. drlg.
Continental Oil, No. 8 Grubb, San Miguelito, Ventura	24- 3-24	1,973	sd. sh. drlg.
C. C. M. Oil, No. 2 Padre Canyon, Ventura Co.	23- 3-24	7,480	fish. D.P.
Continental Oil, No. 4 Padre Canyon, Ventura Co.	15- 3-24	4,479	sd. sh. drlg.
C. C. M. Oil, No. 16 Rincon, Ventura Co.	8- 3-24	4,490	sd. sh. drlg.
C. C. M. Oil, No. 17 Rincon, Ventura Co.	17- 3-24	3,391	sd. sh. drlg.
Oxnard Oil, No. 1 Oxnard, Ventura Co.	10- 1-22	6,302	O.S. drlg.
Rowe, W. G., No. 1 Johnson, Oxnard, Ventura Co.	15- 1-22	1,992	recmtd. 958
Vaca Oil, No. 2 Oxnard, Ventura Co.	6- 1-21	4,219	hd. sh. drlg.
Tide Water A. O., No. 28 V.L.W., Ventura, Ventura	26- 3-23	7,138	swabbing
Tide Water A. O., No. 30 Lloyd, Ventura, Ventura Co.	27- 3-23	5,594	sd. sh. drlg.
Tide Water A. O., No. 61 Lloyd, Ventura, Ventura Co.	27- 3-23	7,070	flow. 150 b.d.
Tide Water A. O., No. 62 Lloyd, Ventura, Ventura Co.	27- 3-23	6,080	flow. 75 b.d.
Tide Water A. O., No. 63 Lloyd, Ventura, Ventura Co.	27- 3-23	1,982	sd. sh. drlg.
Tide Water A. O., No. 137 Lloyd, Ventura, Ventura	27- 3-23	10,060	C.P. 8,740
Tide Water A. O., No. 138 Lloyd, Ventura, Ventura	27- 3-23	1,571	sd. sh. drlg.
Tide Water A. O., No. 18 Hartman, Ventura, Ventura	22- 3-23	7,164	sd. sh. drlg.
Shell Oil, No. 90 Taylor, Ventura Ave., Ventura Co.	30- 3-23	6,794	O.S. drlg.
General Pet., No. 17 Barnard, Ventura, Ventura Co.	23- 3-23	8,310	O.S. drlg.
General Pet., No. 13 Notten, Ventura, Ventura Co.	28- 3-23	7,965	O.S. drlg.
Tide Water A. O., No. 10-E-3 Lost Hills, Kern Co.	3-26-20	2,067	idle
Tide Water A. O., No. 11-B Lost Hills, Kern Co.	11-26-20	1,100	P.B. 997
Standard Oil, No. 4 United, Lost Hills, Kern Co.	2-26-20	1,296	pump. 183 b.d.
Standard Oil, No. 5 United, Lost Hills, Kern Co.	2-26-20	1,167	bailing
Par-Mer Oil, No. 1 McKittrick, Kern Co.	6-31-22	681	sd. sh. drlg.
Birch-Ranch Oil, No. 1 Lovett, McKittrick, Kern Co.	10-30-21	3,860	idle
Michels, George, No. 1 Ynez, Temblor, Kern Co.	36-29-20	1,610	P.B. 435
Standard Oil, No. 2 Randolph, Semi-Tropic, Kern Co.	14-27-23	5,065	sd. sh. drlg.
Continental Oil, No. 2 Wasco, Kern Co.	8-27-24	11,090	br. sh. drlg.
Belridge Oil, No. 43-26 North Belridge, Kern Co.	26-27-20	6,972	br. sh. drlg.
Belridge Oil, No. 53-26 North Belridge, Kern Co.	26-27-20	7,665	br. sh. drlg.
Belridge Oil, No. 61-26 North Belridge, Kern Co.	26-27-20	8,400	flow. 3,165 b.d.
Belridge Oil, No. 28-1 North Belridge, Kern Co.	1-28-20	8,190	hd. sh. drlg.
Texas Co., No. 1 Martin, North Belridge, Kern Co.	22-27-20	8,215	O.S. drlg.
General Pet., No. 1 St. Helens, Belridge, Kern Co.	12-28-20	1,997	sd. sh. drlg.
Eastmont Oil, No. 4 Olcese, Round Mountain, Kern	16-28-29	1,750	pump. 148 b.d.
Honolulu Oil, No. 23 Round Mountain, Kern Co.	20-28-29	1,755	sd. sh. drlg.
Honolulu Oil, No. 25 Round Mountain, Kern Co.	18-28-29	1,915	pump. 60 b.d.
Honolulu Oil, No. 43 Round Mountain, Kern Co.	18-28-29	2,152	pump. 445 b.d.
Tampico Pet., No. 3 Round Mountain, Kern Co.	17-28-29	1,887	O.S. drlg.
Link Trucking, No. 1 Round Mountain, Kern Co.	30-28-29	1,695	resume work
Cal-Western Oil, No. 6 C.C., Round Mountain, Kern	12-28-28	1,754	sd. sh. drlg.
McDonald, H. A., No. 1 Larkin, Rd. Mountain, Kern	12-28-28	1,951	pump. 520 b.d.
Oils, Inc., of California, No. 7-2 Kern Front, Kern Co.	13-28-27	1,135	P.B. 1,098
Malone, F. H., No. 3 Mabry, Kern Front, Kern Co.	4-28-27	2,220	gr. sd. drlg.
Martin, J., No. 2 Kern Front, Kern Co.	17-28-27	2,880	O.S. drlg.
California Star Oil, No. 3-80 Kern Front, Kern Co.	22-28-27	2,460	O.S. drlg.
Texas Co., No. 9 Lehman, Kern Front, Kern Co.	23-28-27	2,065	pump. 240 b.d.
Republic Pet., No. 3 Cal. Tech., Kern River, Kern Co.	24-28-27	1,671	sd. sh. drlg.
Fuhrman, A., No. 10 Kern River, Kern Co.	28-28-28	620	pump. 20 b.d.
Sleeper Ridge Oil, No. 1 Kern River, Kern Co.	15-29-28	,850	idle
Vedder, D. G., No. 2 B.N.B., Mount Poso, Kern Co.	32-26-28	1,571	O.S. drlg.
Ring Oil, No. 29-4 Bowles, Mount Poso, Kern Co.	29-26-28	1,744	O.S. drlg.
Sunset Oil, No. 3 Bowles, Mount Poso, Kern Co.	21-26-28	1,592	O.S. drlg.
Sunset Oil, No. 4 Vedder, Mount Poso, Kern Co.	28-26-28	1,436	O.S. drlg.
Vedder Pet., No. 29-3 Lambert, Mount Poso, Kern Co.	29-26-28	1,863	dry; abd.
Vedder Pet., No. 1 Hyde, Mount Poso, Kern Co.	32-26-28	1,918	dry; abd.
Golden Bear Oil, No. 1 Hyde, Mount Poso, Kern Co.	32-26-28	1,890	dry; abd.
Framac Oil, No. 1 Brown, Mount Poso, Kern Co.	22-27-27	1,351	fish. D.P.
Desert Glow Oil, No. 2 Mount Poso, Kern Co.	14-27-27	1,232	bailing
Baker, H. W., No. 2 Mount Poso, Kern Co.	28-27-27	2,012	reaming
Union Oil, No. 2-B Tribe, Mount Poso, Kern Co.	28-27-28	1,928	sd. sh. drlg.
Meridian Oil, No. 6 Turner, Fruitvale, Kern Co.	23-29-27	2,897	sd. sh. drlg.
Western Gulf Oil, No. 9 Red Ribbon, Fruitvale, Kern	27-29-27	3,161	sd. sh. drlg.
Sandy Oil, No. 2 Fruitvale, Kern Co.	26-29-27	3,497	pump. water
Section Six Oil, No. 1 Mountain View, Kern Co.	6-31-29	5,571	sd. sh. drlg.
Mohawk Pet., No. 4 Fruit, Mountain View, Kern Co.	4-31-29	5,778	redrlg. 5,450
Ohio Oil, No. 6 Derby, Mountain View, Kern Co.	33-30-29	4,981	sd. sh. drlg.
Hogan Pet., No. 5 Symons, Mountain View, Kern Co.	4-31-29	4,261	sd. sh. drlg.
Hogan Pet., No. 3 Peters, Mountain View, Kern Co.	5-31-29	5,212	pump. 218 b.d.
Hogan Pet., No. 4 Bankline, Mountain View, Kern Co.	4-31-29	3,521	sd. sh. drlg.
Hogan Pet., No. 9 Wharton, Mountain View, Kern Co.	32-30-29	6,025	sd. sh. drlg.
General Pet., No. 2 Freeport, Mountain View, Kern	19-30-29	4,760	flow. 495 b.d.
Monterey Expl., No. 2 Nichols, Edison, Kern Co.	14-30-29	1,766	sd. sh. drlg.
Wood-Callahan Oil, No. 1 Harvey, Edison, Kern Co.	21-30-29	3,940	sd. sh. drlg.
General Pet., No. 1 Houchin, Arvin, Kern Co.	27-31-29	7,100	sd. sh. drlg.
Arkelo Oil, No. 1 Lerdo, Kern Co.	23-28-26	10,050	fish. D.P.
Union Oil, No. 1-34 Rio Bravo, Kern Co.	34-28-25	11,104	sd. sh. drlg.
Continental Oil, No. 1 Rosedale, Kern Co.	12-29-26	10,210	fish. D.P.
Superior Oil, No. 9 KCL, Greeley, Kern Co.	3-30-26	7,605	O.S. drlg.
Standard Oil, No. 11-8 KCL, Greeley, Kern Co.	18-29-26	7,426	fish. D.P.
Standard Oil, No. 11-9 KCL, Greeley, Kern Co.	20-29-26	6,296	sd. sh. drlg.
Standard Oil, No. 11-10 KCL, Greeley, Kern Co.	17-29-26	5,632	sd. sh. drlg.
Standard Oil, No. 12-2 KCL, Greeley, Kern Co.	16-29-26	7,679	sd. sh. drlg.
Standard Oil, No. 1-F Greeley, Kern Co.	20-29-26	5,997	sd. sh. drlg.
Shell Oil, No. 8-28-A, KCL, Ten Section, Kern Co.	28-30-26	5,670	sd. sh. drlg.
Shell Oil, No. 61-31-B KCL, Ten Section, Kern Co.	30-30-26	8,241	O.S. drlg.
Ohio Oil, No. 3-E, KCL, Ten Section, Kern Co.	14-30-25	5,984	sd. sh. drlg.
Standard Oil, No. 1 Magunden, Kern Co.	2-30-28	2,997	sd. sh. drlg.
Merritt Annex Oil, No. 6 Midway-Sunset, Kern Co.	25-12-24	2,890	sd. sh. drlg.
C. C. M. Oil, No. 44-21 Midway-Sunset, Kern Co.	21-32-23	1,299	sd. sh. drlg.
C. C. M. Oil, No. 45-21 Midway-Sunset, Kern Co.	21-32-23	1,978	sd. sh. drlg.
C. C. M. Oil, No. 1-U.S., Midway-Sunset, Kern Co.	30-32-24	2,985	P.B. 2,520
Hallmark Oil, No. 8 Midway-Sunset, Kern Co.	25-12-24	1,981	sd. sh. drlg.
Richfield Oil, No. 13 Fellows, Midway-Sunset, Kern	6-32-23	1,500	pump. 60 b.d.
Richfield Oil, No. 14 Fellows, Midway-Sunset, Kern	6-32-23	982	sd. sh. drlg.
Wreden Pet., No. 1 Midway-Sunset, Kern Co.	12-11-24	1,652	sd. sh. drlg.
Standard Oil, No. 3-13-D Midway-Sunset, Kern Co.	13-32-24	3,570	sd. sh. drlg.
National Oil, No. 30 Midway-Sunset, Kern Co.	35-32-23	596	sd. sh. drlg.
Texas Co., No. 1 Pioneer, Midway-Sunset, Kern Co.	33-11-23	3,420	hd. sh. drlg.
Texas Co., No. 25 Midway-Sunset, Kern Co.	32-32-24	3,170	O.S. drlg.
Texas Co., No. 26 Midway-Sunset, Kern Co.	32-32-24	2,386	sd. sh. drlg.
U. S. Pumping Equip. No. 2 Midway-Sunset, Kern Co.	12-11-24	1,590	sd. sh. drlg.
Transco Drlg., No. 4 Grimm, Midway-Sunset, Kern	25-32-23	2,773	gr. sd. drlg.
Hall-Baker Co., No. 1 Tejon, Kern Co.	1-10-19	2,121	gr. sd. drlg.
Pure Oil, No. 1 Cantua, Fresno Co.	31-18-17	1,982	sd. sh. drlg.
K. N. D. A., No. 4-18-J Kettleman North, Fresno Co.	18-21-17	11,295	gr. sd. drlg.
K. N. D. A., No. 43-34-J Kettleman North, Fresno Co.	34-21-17	5,755	br. sh. drlg.
K. N. D. A., No. 41-4-P Kettleman North, Fresno Co.	4-22-17	7,880	hd. sh. drlg.
K. N. D. A., No. 83-4-P Kettleman North, Fresno Co.	4-22-17	6,751	fish. D.P.
K. N. D. A., No. 27-12-P Kettleman North, Kings Co.	12-22-17	5,571	br. sh. drlg.
K. N. D. A., No. 38-12-P Kettleman North, Kings Co.	12-22-17	2,162	sd. sh. drlg.
K. N. D. A., No. 6-6-Q Kettleman North, Kings Co.	6-22-18	7,160	br. sh. drlg.
K. N. D. A., No. 27-6-Q Kettleman North, Kings Co.	6-22-18	6,654	br. sh. drlg.
Standard Oil, No. 27-21-J Kettleman North, Fresno	21-21-17	5,141	sd. sh. drlg.
Standard Oil, No. 27-23-J Kettleman North, Fresno	33-21-17	7,462	br. sh. drlg.
Standard Oil, No. 2-11-P Kettleman North, Kings Co.	11-22-17	6,092	sd. sh. drlg.
Standard Oil, No. 76-1-P Kettleman North, Kings Co.	1-22-17	4,655	sd. sh. drlg.
Superior Oil, No. 1 Huffman, Kettleman N., Fresno	29-21-17	9,364	sd. sh. drlg.
Temblor Oil, No. 1-B Kettleman Middle, Kings Co.	25-23-18	8,300	cmtd. 8,050
Amerada Pet., No. 1 Carano, Merced Co.	19-10-11	610	cmtd. 610
Hancock Oil, No. 1 Huasna, San Luis Obispo Co.	30-12-33	3,165	sd. sh. drlg.
Elba Oil, No. 1 Pajaro, Monterey Co.	6-13- 2	3,970	recmtd. 3,871
Anderson, Amil, No. 1 Cholame, Monterey Co.	15-24-14	2,640	br. sh. drlg.
Texas Co., No. 2 Eureka, Humboldt Co.	22- 3- 1	5,480	flow. gas
Amerada Pet., No. 1 Sacramento, Rio Vista, Solano	24- 4- 2	4,230	sd. sh. drlg.
Tracy Drlg., No. 1 Hansen, Rio Vista, Solano Co.	25- 4- 2	3,350	sd. sh. drlg.
Standard Oil, No. 1 Delano, Tulare Co.	36-24-23	8,554	sd. sh. drlg.
Magnet O. & G., No. 1 Delano, Tulare Co.	29-24-24	7,010	sd. sh. drlg.
Standard Oil, No. 1 Hooper, Woodland, Yolo Co.	32- 9- 1	4,563	gr. sh. drlg.

KEY TO ABBREVIATIONS USED IN DRILLING REPORTS

Abd., abandoned.
Bldg., building.
B.D., barrels daily.
B.P., back pressure.
B.R., building rig.
Br. sh., brown shale.
B.S., basic sediment.
C.P., casing pressure.
Cd. or Crd., cored.
C.D., corrected depth.
Cg., coring.
C.L., center line.
Cmtd., cemented.
C.O., cleaning out.
Comp., completed.
Compr., compressor.
C.P., casing pressure, also cement through perforations.
Csg., casing.
D.D., drilling (or drilled) deeper.
Drlg. or Drg., drilling.
Drk. or Dk., derrick.
D.S., drill stem.
D.&A., dry and abandoned.
Fsg., fishing.
Gbo., gumbo.
G.I., gas injection.
Gr., gravity.
Gr. sd., gray sand.
Grn. sh., green shale.
Hd. sd., hard sand.
H.F.W., hole full of water.
I.P., initial production.
L., lime.
L.D.D., later drilled deeper.
Lnr., liner.
Loc., location.
M.I.M., moving in material.
M.I.R., moving in rig.
M.I.R.T., moving in rotary tools.
M.O.T., milling on tools.
O.I.H., oil in hole.
O.S., oil sand.
O.T.D., old total depth.
O.W.D.D., old well drilling deeper.
O.W.P.B., old well plugging back.
P.B., plugging or plugged back.
P.B.P., plugging big pipe.
P.L., pipe line.
P.L.O., pipe line oil.
Pmpg., pumping.
P.O.P., putting on pump.
P.P., pulled pipe.
Rd. sd., red sand.
Rd. sh., red shale.
Recmt., recemented.
Rmg., reaming.
Redrlg., redrilling.
Rng., running.
R.O.G., rig on ground.
R.P., rock pressure.
R.U., rigging up.
R.U.R., rigging up rotary.
R.U.R.T., rigging up rotary tools.
R.U.S.T., rigging up standard tools.
R.&T., rods and tubing.
S. or Sd., sand.
S.D., shut down.
Sdy. sh., sandy shale.
Sdtr., or St., sidetracking.
S.D.P.L., shut down for pipe line.
S.D.W.O., shut down awaiting orders.
S.G., show gas.
Sh.&L., shale and lime.
S.I., shut in.
S.I.P., shut in, prorated.
S.L.M., steel line measurement.
S.O., show oil.
S.O.G.&W., show of oil, gas and water.
Spdg. or Spd., spudding.
S.R., straightreaming.
Stdg., standardizing (also standing).
S.W., salt water.
Swbg., swabbing.
T.A., temporarily abandoned.
Tbg., tubing.
T.D., total depth.
T.P., tubing pressure.
Tr., tract.
U.R., underreaming.
W.I.H., water in hole.
W.O., workover.
W.O.C. or W.O.C.S., waiting on cement to set.
W.P., working pressure.
W.S.O., water shutoff.
W.S.S.O.K., water shutoff O.K.
W.S.O.N.G., water shut off no good.
W.S.R. or W.O.S.R., wait on standard rig.
Wtr., water.

Standard Oil, No. 1 Cook, Dunnigan, Yolo Co.	32-12- 1	3,461	gr. sh. drlg.
Empire O. & G., No. 1 Woodland, Yolo Co.	8- 9- 3	231	sd. sh. drlg.
Wilshire Oil, No. 1 Half Moon Bay, San Mateo Co.	20- 6- 5	2,202	sd. sh. drlg.

IMPORTANT WELLS AND SOUTHERN CALIFORNIA WILDCATS

Company, well and location—	S. T. R.	Depth	Status—
Richfield Oil, No. 1 Howard, Los Angeles Co.	7- 3-14	7,198	sd. sh. drlg.
Richfield Oil, No. 1-SF El Segundo, Los Angeles Co.	18- 3-14	7,690	P.B. 7,615
Richfield Oil, No. 2 Elsie, El Segundo, Los Angeles	12- 3-15	7,050	flow. 3,660 b.d.
Union Oil, No. 3 El Segundo, Los Angeles Co.	18- 3-14	7,520	O.S. drlg.
Sunshine Oil, No. 1 El Segundo, Los Angeles Co.	12- 3-15	7,101	flow. 1,350 b.d.
Apex Pet., No. 1 Elsie, El Segundo, Los Angeles Co.	12- 3-15	2,394	sd. sh. drlg.
Tide Water A. O., No. 1 El Segundo, Los Angeles Co.	8- 3-14	6,076	sd. sh. drlg.
Ohio Oil, No. 7 Gough, El Segundo, Los Angeles Co.	7- 3-14	7,240	Schist, drlg.
Ohio Oil, No. 8 Gough, El Segundo, Los Angeles Co.	7- 3-14	5,972	sd. sh. drlg.
Texas Co., No. 5 Security, El Segundo, Los Angeles	18- 3-14	2,148	sd. sh. drlg.
Ruchti Pet., No. 1 El Segundo, Los Angeles Co.	12- 3-15	2,985	sd. sh. drlg.
Standard Oil, No. 2 Refinery, El Segundo, L. Angeles	13- 3-15	7,417	sd. sh. drlg.
Standard Oil, No. 3 Refinery, El Segundo, L. Angeles	13- 3-15	7,091	flow. 2,600 b.d.
Standard Oil, No. 4 Refinery, El Segundo, L. Angeles	13- 3-15	121	sd. sh. drlg.
Pacific Western Oil, No. 1 Segundo, Los Angeles Co.	7- 3-14	6,986	hd. sh. drlg.
Getty Oil, No. 1-A El Segundo, Los Angeles Co.	7- 3-14	2,261	sd. sh. drlg.
Douglas Oil, No. 9 Peck, Lawndale, Los Angeles Co.	20- 3-14	7,270	flow. salt wtr.
Young & Bryan, No. 1 Peck, Lawndale, Los Angeles	20- 3-14	7,247	dry; abd.
Standard Oil, No. 84 L.A.I., Inglewood, Los Angeles	17- 2-14	1,455	cmtd. 1,455
B. C. L. Oil, No. 1 Torrance, Los Angeles Co.	5- 4-14	3,260	cmtd. 3,162
C. C. M. Oil, No. 34-T Torrance, Los Angeles Co.	16- 4-14	4,960	O.S. drlg.
Keystone Oil, No. 2 Torrance, Los Angeles Co.	16- 4-14	2,975	reaming
Loma Verde Oil, No. 12 Torrance, Los Angeles Co.	16- 4-14	4,873	P.B. 4,567
Kavanaugh, E. C., No. 1 Palos Verdes, Los Angeles	17- 4-14	4,831	sd. sh. drlg.
Tide Water A. O., No. 4 Cypress, Potrero, Los Angeles	34- 2-14	4,265	sd. sh. drlg.
Shell Oil, No. 92 Reyes, Dominguez, Los Angeles	33- 3-13	6,769	cmtd. 6,767
Shell Oil, No. 49 Reyes, Dominguez, Los Angeles Co.	33- 3-13	5,327	flow. 70 b.d.
Union Oil, No. 56 Callender, Dominguez, Los Angeles	33- 3-13	7,470	sd. sh. drlg.
Union Oil, No. 57 Callender, Dominguez, Los Angeles	33- 3-13	3,925	sd. sh. drlg.
Union Oil, No. 45 Hellman, Dominguez, Los Angeles	33- 3-13	3,911	sd. sh. drlg.
Union Oil, No. 35 HP., Rosecrans, Los Angeles Co.	18- 3-13	4,520	sd. sh. drlg.
Union Oil, No. 17 Rosecrans, Los Angeles Co.	18- 3-13	6,950	sd. sh. drlg.
Macrate, A. N., No. 2 Rosecrans, Los Angeles Co.	17- 3-13	6,135	sd. sh. drlg.
Bolsa Chica Oil, No. 1 Rosecrans, Los Angeles Co.	20- 3-13	7,944	P.B. 7,270
Burt, A. G., No. 1 Newhall, Los Angeles Co.	36- 4-17	2,352	sd. sh. drlg.
Barnsdall Oil, No. 2-S.F., Newhall, Los Angeles Co.	26- 4-17	5,084	cmtd. fish
Holbrook Pet. No. 1 Newhall, Los Angeles Co.	28- 4-16	6,250	P.B. 5,700
General Pet., No. 5-A Ford, Wilmington, Los Angeles	4- 5-13	2,164	sd. sh. drlg.
General Pet., No. 12 Ford, Wilmington, Los Angeles	4- 5-13	4,040	flow. 3,004 b.d.
General Pet., No. 17 Ford, Wilmington, Los Angeles	4- 5-13	5,440	flow. 888 b.d.
General Pet., No. 22 Ford, Wilmington, Los Angeles	4- 5-13	3,610	sd. sh. drlg.
General Pet., No. 4 Isco, Wilmington, Los Angeles	4- 5-13	3,660	flow. 375 b.d.
General Pet., No. 6 Isco, Wilmington, Los Angeles	4- 5-13	2,147	sd. sh. drlg.
Bankline Oil, No. 10-P.T., Wilmington, Los Angeles	34- 4-13	3,387	flow. 150 b.d.
Bankline Oil, No. 18-P.T., Wilmington, Los Angeles	34- 4-13	1,897	sd. sh. drlg.
Bankline Oil, No. 9-D.H., Wilmington, Los Angeles	34- 4-13	2,286	sd. sh. drlg.
Bankline Oil, No. 25-D.H., Wilmington, Los Angeles	34- 4-13	3,307	flow. 610 b.d.
Baker Oil, No. 1 Wilmington, Los Angeles Co.	33- 4-13	1,196	sd. sh. drlg.
Caminol Oil, No. 1-P Wilmington, Los Angeles Co.	33- 4-13	3,173	sd. sh. drlg.
Hall, F. C., No. 1 V.H., Wilmington, Los Angeles Co.	33- 4-13	2,999	sd. sh. drlg.
Macmillan Pet., No. 7-H Wilmington, Los Angeles	32- 4-13	3,585	flow. 310 b.d.
O'Dell & Dunlap, No. 1 Wilmington, Los Angeles Co.	33- 4-13	3,634	flow. 290 b.d.
Pongratz, Gus, No. 2 Banning, Wilmington, Los A.	33- 4-13	3,620	sd. sh. drlg.
Royalty Serv., No. 842-2 Wilmington, Los Angeles	33- 4-13	5,380	flow. 361 b.d.
Selegna Drlg., No. 12 Wilmington, Los Angeles Co.	33- 4-13	2,593	sd. sh. drlg.
Sonwell Oil, No. 3-W Wilmington, Los Angeles Co.	33- 4-13	1,978	sd. sh. drlg.
Union Pacific R.R., No. 38 Wilmington, Los Angeles	34- 4-13	3,375	sd. sh. drlg.
Union Pacific R.R., No. 40 Wilmington, Los Angeles	33- 4-13	3,250	sd. sh. drlg.
Union Pacific R.R., No. 41 Wilmington, Los Angeles	34- 4-13	3,436	sd. sh. drlg.
Union Pacific R.R., No. 55 Wilmington, Los Angeles	4- 5-13	3,439	sd. sh. drlg.
Union Pacific R.R., No. 57 Wilmington, Los Angeles	4- 5-13	3,436	sd. sh. drlg.
Union Pacific R.R., No. 4-C Wilmington, Los Angeles	33- 4-13	3,432	sd. sh. drlg.
Union Pacific R.R., No. 6-C Wilmington, Los Angeles	33- 4-13	2,942	sd. sh. drlg.
Camroo Oil, No. 1 Sterns, Pomona, Los Angeles Co.	33- 1- 9	2,151	sd. sh. drlg.
Julian, C. A., No. 1 Koch, Walnut, Los Angeles Co.	5- 2- 9	2,750	gr. sd. drlg.
St. Helens Pet. No. 20-M, Montebello, Los Angeles Co.	6- 2-11	4,000	deepening
Union Oil, No. 1 Flood Control, Los Angeles Co.	13- 4-13	1,597	sd. sh. drlg.
Texas Co., No. 3 Flower, Long Beach, Los Angeles	19- 4-12	4,843	rig. to pump
Texas Co., No. 4 Bauman, Long Beach, Los Angeles	19- 4-12	2,796	sd. sh. drlg.
Rico Pet., Inc., No. 1 Long Beach, Los Angeles Co.	30- 4-12	2,631	sd. sh. drlg.
Richfield Oil, No. 10 Denni, Long Beach, Los Angeles	19- 4-12	4,976	pump. 51 b.d.
Richfield Oil, No. 4 Keon, Long Beach, Los Angeles	19- 4-12	3,096	sd. sh. drlg.
Exeter Oil, No. 5 Transport, Long Beach, Los Angeles	19- 4-12	2,581	sd. sh. drlg.
Union Oil, No. 100 Santa Fe Springs, Los Angeles Co.	6- 3-11	10,739	cleaning out
Texas Co., No. 7-W Santa Fe Springs, Los Angeles	6- 3-11	6,470	redrlg. 6,353
Continental Oil, No. 40 Bixby, Seal Beach, Orange	2- 5-12	6,005	hd. sh. drlg.
Wilshire Oil, No. 6-B Huntington, Orange Co.	10- 6-11	5,375	rig. to pump
Johnston Drlg., No. 1 Sunset Beach, Orange Co.	20- 5-11	6,487	dry; abd.
Brea Canyon Oil, No. 36 Brea Canyon, Orange Co.	2- 3-10	4,000	redrlg. 3,900
Standard Oil, No. 127 Murphy, West Coyote, Orange	18- 3-10	2,520	sh. sd. drlg.
Bartholomae Oil, No. 5 East Coyote, Orange Co.	22- 3-10	4,624	pump. 35 b.d.
Arrowhead Oil, No. 2 Bradford, Richfield, Orange Co.	32- 3- 9	4,632	P.B. 4,555
Texas Co., No. 2 Isaacs, Richfield, Orange Co.	32- 3- 9	3,125	sd. sh. drlg.
Union Oil, No. 29 Chapman, Richfield, Orange Co.	30- 3- 9	8,661	sd. sh. drlg.
Hjorth & Mohr, No. 1 Yorba, Orange Co.	22- 3- 9	1,359	O.S. drlg.
Beverly Hills Pet., No. 1 Fricke, Yorba, Orange Co.	21- 3- 9	1,869	recmtd. 1,833
Mid-State Pet., No. 1 Oliver, Yorba, Orange Co.	22- 3- 9	1,742	P.B. 1,600
Shell Oil, No. 1-H Anaheim, Orange Co.	9- 4-10	6,760	sd. sh. drlg.

KANSAS

Week Ending October 9 (Descriptions are East unless marked otherwise)

Barber County

Helmerich & Payne et al No. 1 Blunk Est., C SE sec. 18-34-13w. S.D. 4,915 ft.

Olson Oil Co. and Skelly Oil Co. No. 1 Elsea, SW SE NW sec. 27-32-14w. Set 7-in. 4,944 ft.; drlg. cement.

Palmer Oil Corp. et al No. 1 Warwick, C NW sec. 29-31-10w. Rig.

W. I. Southern, Inc., No. 1 Davis, SE SE NE sec. 24-34-15w. S.D. 5,526 ft.

Barton County

Armer & Vernon Oil & Gas Co. No. 1 Persons, SW SW SE sec. 7-17-13w. Drlg. 3,350 ft.

Brouk and National Ref. Co. No. 1 Gory, NW SW sec. 10-17-13w. Drlg. 3,050 ft.

Martin & Foraker et al No. 1 Dick Est., NE SW SW sec. 31-19-11w. Rig.

Arch Merriam et al No. 1 Norris, NE NE NW sec. 33-17-11w. Running 12-in. csg. 330 ft.

C. L. Price No. 1 Hammeke, NE NE SW sec. 12-18-12w. Sil. 3,415-27 ft.; 1,800 ft. O.I.H.

Shell Pet. Corp. No. 1 Peterman, SE NE SE sec. 13-16-14w. T.D. 3,366 ft.; 2,650 ft. O.I.H. in 7¼ hrs.

Ralph Wixson et al No. 1 Buhrle, SE SE NE sec. 14-16-13w. Drlg. 3,397 ft.

Chautauqua County

C. L. Brosius et al No. 1 Garrett, NW SW NW sec. 26-32-11. H.F.W. 2,076 ft., T.D.; P.B. 1,545 ft.; C.O.

W. G. Buffington No. 1 Fisher, CWL SW NW sec. 10-34-9e. S.D. 1,050 ft.

C. R. Craft No. 1 Lagree, SE NW NE sec. 8-32-12e. T.D. 2,080 ft.; P.B. 687 ft.

Harrison No. 1 Brown, NE SE NE sec. 19-34-10. Drlg. 820 ft.

Ingot Oil Co. No. 1 McKee, SW NE SW sec. 21-32-12. Drlg. 895 ft.

I. W. Siegel No. 1 Temple, SW cor. sec. 31-32-12. Rig.

S. H. Vineard No. 1 Hughes, NE NE SE sec. 13-32-12. Drlg. 520 ft.

Clark County

Olson Oil Co. et al No. 1 Watkins, SW NW sec. 23-32-21w. Drlg. 535 ft.

Cowley County

Arthur Brewer No. 1 Starkey, SW NE sec. 16-30-4. T.D. 2,802 ft.; swbd. 65 B.O.P.D.

Pryor & Lockhart No. 1 Brown, NE SE SE sec. 34-33-2e. Sil. 3,853-64 ft., T.D.; S.D.O.

Smith & Price No. 1 Henderson, SW SW sec. 25-32-6. Drlg. 765 ft.

Ellis County

Aylward Prod. Co. et al No. 1 Berens, SE SE sec. 10-14-16w. Drlg. 1,635 ft.

Brunson Drlg. Co. et al No. 1 Weisner, SE SW SE sec. 31-13-17w. T.D. 3,651 ft.; 200 ft. W.I.H.

Buffalo Oil Co. No. 1 Phillip, NE NE sec. 18-14-16w. H.F.W. 3,455-60 ft.; P.B. to 3,364 ft.; pot. 1,519 B.O.; comp.

Colonial Oil Co. and Bernheimer No. 1 Albert, SW SW NE sec. 31-12-18w. U.R. 13-in. 1,260 ft.

Lario O. & R. Co. No. 1 Bell, NW NW NE sec. 8-12-18w. Drlg. 2,600 ft.

L. M. Reynolds No. 1 Polcyn, SE SE NE sec. 24-13-16w. H.F.W. 3,417-24 ft., T.D.; D.&A.

P. G. Revnolds et al No. 1 Karlin, NW cor. sec. 13-12-18w. U.R. 8-in. 2,565 ft.

C. E. W. Skiles et al No. 1 Jensen, SW SE NE sec. 26-12-18w. Drlg. 2,980 ft.

Earl Wakefield et al No. 1 Burnett, NW NW NE sec. 1-11-18. T.D. 3,552 ft.; 2,-600 ft. O.I.H.

Ellsworth County

Hinkle et al No. 1 Alden, SE SE SW sec. 17-17-10w. Drlg. 2,220 ft.

Ford County

Olson Oil Co. et al No. 1 Fowler, C SW sec. 26-27-22w. Set 12-in. csg. 250 ft.; W.O.C.

Grant County

R. K. Wilson No. 1-20 Bank, C NE sec. 20-28-37w. Set. 6-in. 2,324 ft.; R.U.S.T.

Greenwood County

Eagle Oil Co. No. 1 Stine, NE NE SE sec. 13-28-10. S.D. 700 ft.

Ward McGinnis et al No. 1 Henly Estate SW cor. sec. 25-25-9. T.D. 2,234 ft.; H. F.W.; P.B.; cmt. 6-in.

S. Van Devanter et al No. 1 Dove, NE SE SW sec. 12-28-11. Drlg. 500 ft.

Whittaker & Johnson No. 1 Cannon, CEL SE NW sec. 8-26-13. Rig.

Harvey County

Allison et al No. 1 Hawks, SE SW NE sec. 16-24-1w. Drlg.

Jackson County

Lemmick Oil Co. No. 1 Marble Savings Bank, NE cor. sec. 26-9-14. Spd. and S.D.

Kearny County

J. L. Murphy No. 1 Masonic Home, C NW sec. 1-26-36w. S.D. 1,468 ft.

Kingman County

Carter Oil Co. No. 1 Davis, C E½ NE NE sec. 24-28-8w. T.D. 4,122 ft.; reaming 3,690 ft.

Logan County

Morgan, Flynn, Cobb et al No. 1 McMillen, C NW sec. 9-13-37w. Drlg. 3,910 ft.

Marion County

Western Kansas O. & R. Co. et al No. 1 Suderman, SE SW NW sec. 22-20-2e. T.D. 3,125 ft.; D.&A.

McPherson County

C. E. Ash Drlg. Co. No. 1 Broman, NE NE NW sec. 19-17-4w. U.R. 6-in. 3,053 ft.

Bradley Bros. No. 1 Barnholt, SW SW SE sec. 30-20-5w. Chat 3,292 ft.; T.D. 3,335 ft.; P. 115 B.O. in 14 hrs.; down 5 hrs.

Fred C. Frank et al No. 1 Doles, SE NW NE sec. 12-19-1w. Set 8-in. 2,775 ft.; S.D.

Wamhoff et al No. 1 Nuse, SE NE SW sec. 18-18-4w. S.D. 1,850 ft.

Meade County

Pacific Mid-West Co. No. 1 Rexford, NE SE SW sec. 8-30-29w. Drlg. 900 ft.

Mitchell County

Geo. Siedhoff et al No. 1 Greiss, SW SW SE sec. 16-8-10w. S.D. 4,022 ft.

Ness County

Trojan O. & G. Co. No. 1 Page Milling Co., SE SE NW sec. 36-18-26w. Set 8-in. 2,968 ft.; C.O. 3,159 ft.

Newton Dev. Co. No. 1 Tenny, NW NW SE sec. 19-18-25w. Inc. oil 4,400-02 ft 3,500 ft. O.I.H. at 4,406 ft.; acidized; no increase.

Osborne County

Fred C. Chaddox and Atlantic Ref. Co No. 1 Slater, NE SW NE sec. 33-10-15w. U.R. 8-in. 2,880 ft.

F. E. Fullerton & Son No. 1 Moray, NE SE SW sec. 27-10-12w. S.D. 500 ft.

Phillips County

C. W. Davidson et al No. 1 Elliff, SE NE NE sec. 35-5-18w. S.D. 350 ft.

Pratt County

Atlantic Ref. Co. et al No. 1 Runyon, SW NW NE sec. 11-27-13w. T.D. 4,437 ft.; P.B. 4,300 ft.; fsg.

Skelly Oil Co. et al No. 1 Adams, SE NW NE sec. 2-28-11w. Cementing 7-in. 4,177 ft.

Stanolind O. & G. Co. No. 1 Hartsell, NW SW sec. 14-26-12w. Simpson 4,225 ft.; some saturation 4,295-4,301 ft.

Reno County

Lib Phillips et al No. 1 McPheeters, NE NE NW sec. 22-26-8w. Spd. and S.D.

Sam Schneider et al No. 1 Kroecker, NE cor. sec. 12-22-5w. Drlg. 2,760 ft.

Westgate-Greenland et al No. 1 Popp, SW SW NE sec. 7-25-4w. Rig.

Rice County

Boyle & Grossman No. 1 Diener, SE NE sec. 35-19-1w. S.D. 1,570 ft.

Gerbrand-Pulse Oil & Drilling Co. No. 1 Wellman, SW cor. sec. 22-21-9w. Est. 3,000,000 ft. gas, 3,316-17 ft. T.D.; rig burned.

Gillespie et al No. 1 Strong, NE NW sec. 9-18-8w. Spd. and S.D.

John Hanna et al No. 1 Marshall, NE NW NW sec. 30-18-8w. S.D. 1,515 ft.

Skiles et al No. 1 Campbell, SE SE NE sec. 28-19-9w. T.D. 2,956 ft.; swb. 14 B.O.P.H. and 20 pct. water.

W. E. Witt et al No. 1 Fair, NW SE SE sec. 4-22-8w. S.D. 2,495 ft.

Rooks County

C. R. Craft et al No. 1 Ziegler, NE SW sec. 8-10-16w. Drlg. 3,070 ft.

Graham et al No. 1 Fike, SW cor. sec. 9-9-17w. T.D. 3,326 ft.; pmpd. 50 B.O. and 35 B.W. in 8 hrs.

J. H. Lester No. 1 Methene, SE SE NE sec. 29-10-20w. C.O. 3,875 ft.

Rush County

Duwe & Brouk No. 1 Lebsack, SE SE NE sec. 13-16-16w. Sil. 3,492-95 ft.; 1,500 ft. sulfur water in hole in 2½ hrs.; T.D. 3,512 ft.; S.D.O.

Earl Wakefield et al No. 1 Zimmerman, SE SE SW sec. 7-16-18w. S.D. 3,105 ft.

Wakefield & Brouk No. 1 Kerbs, NW NW SE sec. 11-17-16w. S.D. at 150 ft.

Russell County

Cities Service Oil Co. et al No. 1 Eichman, SW SE sec. 12-15-14w. U.R. 8-in. 3,045 ft.

Cities Service Oil Co. and Texas Co. No. 1 Boxberger B, NE cor. sec. 23-13-15w. T.D. 3,350 ft.; D.&A.

Emrichs et al No. 1 Anderson, NE SE SW sec. 33-15-11w. Spd. and S.D.

Murfin and Vernon O. & G. Co. No. 1 Pearson, NE cor. sec. 31-15-15w. Spd. and S.D.

Parks No. 1 Opdycks, SW cor. sec. 20-14-13w. Drlg. 1,850 ft.

Phil-Han Oil Co. No. 1 Deines, NE NE NW sec. 33-14-14w. Drlg. 2,055 ft.

C. L. Price No. 1 Sebesta, NE NE sec. 36-15-11w. Drlg. 1,120 ft.

Trapp Drlg. Co. et al No. 1 Polcyn, NE SE sec. 34-14-15w. Set 8-in. 2,758 ft.; C.O.

Winkler & Koch No. 1 Jones, SE SE NW sec. 22-14-13w. Sil. 3,180 ft.; S.D.O.

Sedgwick County

Fulton et al No. 1 fee, NE SE sec. 35-28-1e. Drlg. 1,120 ft.

McKnab No. 1 Garrett, SE SW SW sec. 18-29-2e. Drlg. 80 ft.

I. W. Murfin et al No. 1 Martin, SE NW sec. 32-28-1e. Drlg. 2,700 ft.

National Ref. Co. No. 1 fee, SE NE SE sec. 26-27-2e. T.D. 2,016 ft.; U.R. 10-in. 2,015 ft.

W. B. Talbott et al No. 1 Downs Est., SE SE NW sec. 32-28-2e. T.D. 2,232 ft.; 3,-922,000 ft. gas.

Union O. & R. Co. et al No. 1 Howell, SW cor. sec. 6-29-1e. S.D. 2,010 ft.

Stafford County

W. P. Faulkner No. 1 Moses, NW SW sec. 9-22-13w. Drlg. 2,075 ft.

Kessler O. & G. Co. et al No. 1 Pinkston, NE NW sec. 17-22-14w. Drlg. 375 ft.

Fred Rust et al No. 1 Drach, NE SW sec. 12-22-13w. Drlg. 1,589 ft.

Fred P. Rust et al No. 1 Johnson, NW SW sec. 29-25-12w. Fsg. 4,044 ft.

Torry & Feaster et al No. 1 Allen, NW SE sec. 34-22-12w. Drlg. 1,975 ft.

Sumner County

Cities Service Oil Co. No. 1 McCoy, SE SW sec. 11-35-2e. Drlg. 3,026 ft.

Magnolia Pet. Co. No. 1 Baird, SW SE SE sec. 2-30-4w. Drlg. 3,687 ft.

W. M. McKnab No. 1 Blair, SW cor. sec. 7-30-1e. Drlg. 3,215 ft.

R. J. Wixson No. 1 Newton, SE SE sec. 21-30-2e. S.D. 1,975 ft.

Trego County

Central Commercial Oil Co. No. 1 Locker, C SW sec. 12-14-22w. S.D. 4,010 ft.

Thurman Hill et al No. 1 Lawson, SW SW NW sec. 7-14-22w. Whipstock 2,250 ft.; W.O.C.

R. E. McNeely et al No. 1 Hille, C SE NE sec. 22-15-24w. Drlg. 2,345 ft.

Phillips Pet. Co. No. 1 Trego, C SE SW sec. 14-12-23w. Drlg. 4,002 ft.

Wallace County

Wilcox O. & G. Co. No. 1 Parker, SE SE NE sec. 9-11-40w. Prep. to spud.

Woodson County

Becker Bros. et al No. 1 Vann, NW SW SE sec. 22-25-14. H.F.W. 1,519 ft.; T.D.; D.&A.

Fred Rapp No. 1 Houghland, NW NW SE sec. 2-25-15. S.D. 1,520 ft.

Seibel No. 1 Kerschner, CNL NE NE sec. 3-26-15. S.D. 1,498 ft.

Steinle No. 1 Kash, SE SE sec. 4-26-15. S.D. 1,570 ft.

OKLAHOMA

Week Ending October 9

NORTHERN OKLAHOMA

Beckham County

Mid-American Oil Co. No. 1-A Biscoe, SW cor. sec. 28-8-22w. T.D. 2,227 ft.; S.D.

Caddo County

Clyde Becker et al No. 1 Pharris, SE SE NW sec. 24-6-12w. T.D. 6,522 ft.; T.A.

Indian Terr. Illum. Oil Co. No. 1 Dome-Bo, C NE SE sec. 29-6-10w. Cd. 4,107-17

ft.; S.O.; T.D. 4,947 ft.; running 9⅝-in. csg.

Cleveland County

Harner-Turner No. 1 Pollock, C W½ NW NW sec. 13-9-2w. Drlg. 2,890 ft.

W. R. Hollenbeck No. 1 Norman, NW NW NE sec. 17-9-2w. Second Wilcox 7,645-95 ft.; D.&A.

Creek County

M. W. Mosier et al No. 1 Holcomb, SE SW NW sec. 19-18-8. T.D. 3,018 ft.; P.B. 3,015 ft.; swedging csg.

Garvin County

Carter Oil Co. No. 1 Potts, C E½ SE NW sec. 36-1n-3w. Drlg. 2,954 ft.

B. C. D. Edwards No. 1 Clark, NE cor. sec. 16-3n-3e. T.D. 2,405 ft.; drill pipe stuck.

Grady County

Doyle Pet. Co. No. 1 Huffine, NW NW SE sec. 30-5-8w. Drlg.

Gulf Oil Corp. No. 1 Thomas, SW NW NW sec. 14-4-5w. Drlg. 8,160 ft.

Greer County

J. I. Medlin et al No. 1 Broudie, NW cor. sec. 5-6n-20w. T.D. 90 ft.; S.D.

Haskell County

Continental Oil Co. No. 1 Ferguson, SW SE NE sec. 33-8-20. Drlg. 6,970 ft.

Hughes County

Burke-Greis Oil Co. No. 1 Rhea, SW SW SE sec. 14-10-9. Drlg. 2,745 ft.

E. H. Moore, Inc., No. 1 Buck, NW SW SW sec. 21-8-10. Set 5-in. csg. 4,235 ft.; T.D.; C.O.

Phillips Pet. Co. No. 1 Becker, NE NW SW sec. 8-5-10. Drlg. 3,995 ft.

Pure Oil Co. No. 1 Rogers, SE SE NE sec. 18-8-12. Drlg. 1,070 ft.

Kay County

E. J. Shaffer et al No. 1 Haunchild, NE NE SW sec. 8-28-1w. T.D. 3,523 ft.; F. 2,394 B.O. in 7 days; comp.

Kiowa County

Hughes & Reese No. 1 Fultz, SE cor. sec. 10-6-18w. Drlg. 865 ft.

Kiowa Oil Corp. No. 1 Finder, C SW NE sec. 4-6-20w. T.D. 1,050 ft.; abd.

H. L. Wirick et al No. 1 Noske, SE SE NW sec. 1-6n-17w. T.D. 1,205 ft.; abd.

Lincoln County

Ardie Oil Co. No. 1 State, NE NE SE sec. 16-14-4. T.D. 4,984 ft.; R.U.S.T.

C. L. Carlock No. 1 Young, C N half NW NW sec. 23-15-5. Drlg. 1,250 ft.

Continental Oil Co. et al No. 1 Community, NW NW SE sec. 7-15-5. T.D. 4,540 ft.; D.&A.

Riley & Talbot et al No. 1 Weidler, NW SW NW sec. 20-17-2e. Drlg. 3,270 ft.

Logan County

Sunray Oil Co. and Olson Drlg. Co. No. 1 Canning, SW SW NE sec. 31-17-1w. Drlg. 5,583 ft.

Noble County

Darby Pet. Corp. No. 1 McCoy, SE SE SW sec. 24-23-2w. Drlg. 4,400 ft.

Seaboard Western Oil Co. et al No. 1 Guthrie, NW NW NE sec. 6-20-2w. T.D 5,435 ft.; bailing at 2,000 ft.

Okfuskee County

F. W. Merrick No. 1 Mackey, NE NE SW sec. 29-11-10. T.D. 3,387 ft.; hole caving.

Riverland Oil Co. No. 1 Board, NE NW SE sec. 10-13-10. Set 6-in. 2,788 ft.; T.D. 2,840 ft.

Osage County

National Ref. Co. No. 2 Page, NW SW SE sec. 28-22-9. Drlg. 2,572 ft.

Pawnee County

J. F. McManmon et al No. 1 School Land, NW NW NE sec. 16-21-5. T.D. 3,240 ft.; D.&A.

Pittsburg County

Okla. Dist. Oil Co. No. 1 Beeler, NE NE SW sec. 7-7-14. T.D. 5,165 ft.; S.D.

Phillips Pet. Co. No. 1 Gilcrease, NW NW SE sec. 16-7-12. Drlg. 3,627 ft.

Pontotoc County

Boettcher O. & G. Co. No. 1 Cann, SE NW NE sec. 25-4n-7e. T.D. 4,347 ft.; S.D.

Kerlyn Oil Co. No. 1 Pratt, SW SE NE sec. 6-4-4e. Wilcox 2,290-2,355 ft.; T.D.; rng. Schlumberger.

Norbia Oil Co. No. 1 McBride, NE NE SW sec. 10-2n-5e. Loc.

Papoose Oil Co. et al No. 1 Jones, NW SE NW sec. 2-4-5. Viola 2,595 ft.; T.D. 2,840 ft.; run Schlumberger; S.D.O.

Union Dev. Co. No. 1 Abbott, SW NW NE sec. 34-3-6. T.D. 3,320 ft.; drill pipe stuck. S.D.

Pottawatomie County

Roy S. Nash et al No. 1 Miller, C N½ NE SE sec. 29-6-3e. T.D. 4,415 ft.; D.&A.

Seminole County

E. W. Jones et al No. 1 Belford, NE SE NE sec. 9-9-8. Drlg. 4,597 ft.

Stanolind O. & G. Co. and Amerada Pet. Corp. No. 1 Salina, SE NE NW sec. 4-5-6. T.D. 3,317 ft.; P.B. 3,216 ft.; acd.; swbd. 27 B.O. and 4 B.W. in 24 hrs.

Texas County

Hagey et al No. 1 Becker, C NE sec. 4-1n-13ecm. Drlg. 2,400 ft.

Hagey et al No. 1 Peck, C NE sec. 6-1n-13ecm. Rig.

Washita County

John Koberg No. 1 Harms, NW NW NE sec. 6-10-16w. T.D. 4,260 ft.; S.D.

SOUTHERN OKLAHOMA

Atoka County

C. M. Sheldon and Gardner Pet. Co. No. 1 Lee, NE NW SW sec. 2-4s-10e. Drlg. 1,300 ft.

Coal County

Carter Oil Co. No. 1 Claytor, C W½ NE SW sec. 27-2n-9e. Crg. 6,137 ft. in lime.

Phillips Pet. Co. No. 1 Beck, SE SW SW sec. 6-1n-9e. Drlg. 4,080 ft.

Comanche County

M. J. Andrichak No. 1 Korthouse, NW NE SW sec. 35-2n-10w. T.D. 1,095 ft.; 2,000,000 ft. gas; S.I.

Jackson County

Ace Gutowsky No. 1 Booker, NW cor. sec. 33-2n-18w. T.D. 1,012 ft.; S.D.O.

Ace Gutowsky No. 1 Howard, NE SW NW sec. 10-3n-19w. T.D. 950 ft.; D.&A.

E. L. Lippert et al No. 1 Miller, NW cor. sec. 4-2n-18w. T.D. 713 ft.; S.D.

Johnston County

Patton et al No. 1 McCrummins, C SW SW NE sec. 16-1s-6e. S.D. 1,380 ft.

W. T. Sheldon No. 1 Chapman, C NW NW sec. 26-4s-6e. Drlg. 2,107 ft.

Marshall County

Paul Robb et al No. 1 Vittitoe, C NE SE sec. 11-5s-4e. O.W.D.D.; C.O. to 720 ft.; S.D.

Murray County

Meyer & Greenup No. 1 Arbuckle, NW NW NE sec. 18-2s-3e. Spd. and S.D.

O. O. Owens No. 1 Fryer, NE SE NE sec. 34-1s-3e. T.D. 2,574 ft.; 1,400 ft. W.I.H. S.D.

Sinclair Prairie Oil Co. No. 1 Lancaster Trust, C SW NE sec. 10-1-2e. Crg. 4,332 ft.

Pushmataha County

Erle Halliburton et al No. 1 Bagwell, SW NE NE sec. 30-3s-15e. Drlg. 5,300 ft.

Stephens County

Jack Cohen No. 1 Pierce, NE NE NW sec. 24-2s-6w. T.D. 1,609 ft.; S.D. for water.

Coline Oil Co. No. 1 Johnson, C SW SE or NE sec. 1-2n-8w. T.D. 10,000 ft.; to run 7-in. csg.

Chas. Newsom No. 1 Pfile, SW cor. sec. 1-2s-7w. Drlg. 3,037 ft.

Ed Parsons No. 1 Blake, C SW NW sec. 22-2n-8w. T.D. 5,043 ft.; swb. 60 B.O. in 24 hrs.; to install rotary tools.

Tillman County

Cavens et al No. 1 Southerland, SW SW NW sec. 35-4s-16w. T.D. 44 ft.; S.D.

Gulf Oil Corp. No. 1 Prichard, SE NW SE sec. 32-3s-16w. Drlg. 5,003 ft.

Tom Walker No. 1 Bowman, SW SW NW sec. 10-4s-17w. S.D. 200 ft.

ARKANSAS

Columbia County

Standard of La. No. 1 J. P. McKean, SW sec. 8-16s-22w. Cg. 7,152 ft.

Tide Water-Seaboard Oil Co. No. 1 Crumpler, SW NE SW sec. 24-17-19w. Drlg. 4,080 ft.

Cross County

Manning & Martin, Inc., No. 1 Park-Greseck, NW NE NE sec. 4-6n-5e. S.D. 4,350 ft.

Hempstead County

H. D. Easton et al No. 1 R. M. LaGrone sec. 5-12-26. Will whipstock; T.D. 2,940 ft.

Shephard & Todd et al No. 1 Smith, NW SW NE sec. 11-11-25. S.D. 2,290 ft.

Miller County—Rodessa

Anding & Bird No. 4 Skipper, SW NW SW sec. 11-20-28. Drlg. 3,890 ft.

F. W. Burford No. 1 A. J. Cross, E½ SE NE sec. 11-20-28. Drlg. 5,288 ft.

F. W. Burford No. 1 Ahern, S½ NE SW sec. 10-20-28. 7-in. (cor.) 5,958 ft.; T.D. 6,107 ft.

F. W. Burford No. 1 August, S½ SE SW sec. 8-20-27. Cmtd. 7-in. 6,123 ft.; old T.D. 6,229 ft.

F. W. Burford No. 1 S. B. Davis, SW cor. SE NE sec. 11-20-28. Comp.; flw. 65 B.P.H.; T.D. 6,157 ft.

F. W. Burford No. 1 Gardner-Means, SW NW sec. 11-20-27. D.&A. 6,250 ft.

F. W. Burford No. 1-A J. O. Gerrald, NE cor. sec. 15-20-28. R.U.

F. W. Buford No. 2-B G. G. Gerrald, sec. 15-20-28. Drlg. 4,400 ft.

H. L. Hunt No. 1 Womack, SE sec. 10-20-28. Tstg.; T.D. 6,130 ft.

H. L. Hunt No. 2 Womack, NE SW SE sec. 10-20-28. Tstg.; T.D. 6,120 ft.; 7-in. 5,998 ft.

H. L. Hunt No. 3 Womack, NW SW SE sec. 10-20-28. Drlg. 5,160 ft.

Kroll & Travis No. 1 Dickson, SW SE NW sec. 11-20-28. Drlg. 4,682 ft.

Roger Lacey No. 1 Grogan, SE cor. sec. 15-20-28. Tstg.; T.D. 6,041 ft.

Wm. M. Layton No. 4 Terry, SW cor. sec. 14-20-28. Comp.; flw. 108 B.P.H.; T.D. 6,060 ft.

R. H. Long No. 1 Greer, SW NE SE sec. 10-20-28. Drlg. 5,360 ft.

McClanahan et al No. 1 J. P. Greer, SE SW NW sec. 11-20-28. Drlg. 5,415 ft.

McClanahan et al No. 3 Capps, sec. 11-20-28. Drlg. 5,912 ft.

McClanahan et al No. 4 Capps, NE NE SW sec. 11-20-28. Drlg. 4,555 ft.

McClanahan et al No. 5 Capps, NW SW SW sec. 11-20-28. 7-in. 6,015 ft.; T.D. 6,075 ft.

McClanahan et al No. 1-B Capps, N½ SW SW sec. 12-20-28. Tstg.; T.D. 6,112 ft.; 7-in. 6,035 ft.

J. R. Ostrom No. 1 J. O. Gerrald, NW E½ sec. 15-20-28. Drlg. 5,282 ft.

Roberts Bros. Drlg. Co. No. 2 W. A. Capps, SW NW SE sec. 16-20-28. Drlg. 6,012 ft.

Roberts Bros. Drlg. Co. No. 3 W. A. Capps, SE SW NE sec. 16-20-28. Cg. 6,043 ft.

A. M. Sutton No. 1 Cross, SE cor. SE NE sec. 11-20-28. 13⅜-in. 60 ft.

Texas Canadian Oil Co. No. 1 Dickson, SE NW sec. 11-20-28. Drlg. 5,573 ft.

Pulaski County

A. L. Kitselman No. 2 A. L. Kitselman, Jr., SE SE SW sec. 2-1s-13e. Cg. 1,255 ft.

Union County—Schuler

Lion Oil Ref. Co. No. 1-A Edna Morgan, O.W.D.D.; cg. 7,568 ft.

LOUISIANA

NORTH LOUISIANA PROVEN

Caddo—Rodessa

F. W. Burford No. 1 Pitts, NW sec. 1-23-16. Tstg.; T.D. 6,068 ft.

D. C. R. O. Co. No. 1 Dickson, SW cor. SW NW sec. 15-19-14. R.U.

Gulf Ref. Co. No. 2 Campbell, C sec. 4-23-16. 9⅝-in. 2,067 ft.; drlg. 5,970 ft.

P. W. Hamilton No. 1 Caddo L. B., NW cor. sec. 4-19-15. R.U.

La. Oil Prod. Co. No. 13-B Muslow, SE cor. NW SW sec. 4-20-15. Loc.

Magnolia Pet. Co. No. 1 G. W. Hardy, sec. 1-23-16. Comp.; flw. 9½ B.P.H.; T.D. 6,055 ft.

R. W. Norton No. 7 Starke, NW sec. 17-23-16. 9⅝-in. 2,042 ft.; drlg. 5,586 ft.

R. W. Norton No. 10 Starke, NW sec. 17-23-16. 6⅝-in. 5,925 ft.; T.D. 5,980 ft.

Sam M. Richardson No. 1 Sentell, SW cor. sec. 9-19-14. 10-in. 40 ft.

Standard Oil Co. No. 3 McCoy, NE cor. NE NW sec. 10-23-16. 13⅜-in. 256 ft.; 9⅝-in. 2,097 ft.

Standard Oil of La. No. 1-C Parker, NE NE NW sec. 9-23-16. Comp.; flw. 154 B.P.D.; T.D. 6,012 ft.

Stanolind O. & G. Co. No. 129 Dillon Hrs., NW cor. sec. 13-21-15. Loc.

Union Prod. Co. No. 6 Starke, SW cor. sec. 8-23-16. 13⅜-in. 246 ft.; 9⅝-in. 2,232 ft.; drlg. 2,898 ft.

N. LOUISIANA WILDCATS

Bossier Parish

Ark.-La. Gas Co. No. 4 R. O. Roy, sec. 18-17-11. Drlg. 4,420 ft.

L. W. Dennis No. 1 D. T. Roos, SW NW NW sec. 13-19-12. Will set 7-in.; T.D. 850 ft.

Triangle Drlg. Co. No. 1-A Schuler Est., SE NW sec. 13-17-12. 7-in. 3,103 ft.; tstg.; T.D. 3,118 ft.

Caddo Parish

W. D. Ambrose No. 3-B Pender, NW SW sec. 11-20-15. 6-in. 2,186 ft.; comp.; flw. 185 B.P.D.; T.D. 2,196 ft.

La. Oil Prod. Co. No. 11-B Muslow, sec. 4-20-15. Tstg.; T.D. 2,187 ft.

La. Oil Prod. Co. No. 12-B Muslow, sec. 4-20-15. 6-in. 2,174 ft.; W.O.S.R. 2,185 ft.

Orr et al No. 1 Acme fee, C sec. 15-21-16. S.D. 1,882 ft.

G. W. Montgomery No. 1 Caddo Lvy. Bd., SE SW sec. 11-19-15. S.D. 1,600 ft.

L. J. Davis No. 1 Stiles, SE sec. 17-21-16. 8-in. 1,007 ft.; W.O.S.R. 1,019 ft.

La. Oil Prod. Co. No. 10-B Muslow, SW SE SW sec. 4-20-15. Comp.; pmpg. 60 B.P.D.; T.D. 2,194 ft.

Prairie River Synd. No. 1 Hutchinson, SW NW sec. 15-15-12. Drlg. 9,135 ft.

Surf-Maji Oil Co. No. 3 Self, SE sec. 10-20-15. W.O.S.R. 2,193 ft.

Claiborne Parish

Atlantic Ref. Co. et al No. 1-C Patton, sec. 29-21-4. Drlg. 4,266 ft.

R. L. Bauman No. 1 C. S. L. Patton, NW SW NW sec. 1-20-5. Comp.; flw. 85 B. P.H.; T.D. 5,347 ft.

Hollifield & McFarland No. 2 H. W. Patton, W½ NE NE sec. 2-20-5. Rng. 7-in.; T.D. 5,220 ft.

T. L. James No. 1 Baker, sec. 25-21-5. 500 ft. oil; T.D. 5,222 ft.

T. L. James No. 1 D. E. Fowler, W½ NE SW sec. 32-21-4. Comp.; flw. 10 B.P. H.; T.D. 5,224 ft.

Lyons & Neely No. 1 Simms, NE NE sec. 32-20-5. Drlg. 4,860 ft.

Magnolia Pet. Co. No. 1 Fowler, W½ SE SW sec. 32-21-4. Comp.; flw. 8 B.P.H.; T.D. 5,254 ft.

W. L. McClanahan No. 1 J. T. Lewis, W½ SW SE sec. 25-20-7. Drlg. 300 ft.

A. O. Olson No. 2-B T. F. Patton, N½ SE SW sec. 29-21-4. Tstg.; T.D. 5,128 ft.

C. R. Schuster No. 3 Patton Est., N½ NE NE sec. 1-20-5. Fsg. for csg.; T.D. 5,377 ft.

Scouts Oil Corp. No. 1 Bean, E½ NE NW sec. 32-21-4. Flw. by heads; T.D. 5,159 ft.

Shreveport Oil Corp. No. 1 Edwards, NE sec. 16-20-5w. Swbg. 78 B.P.D.; T.D. 5,438 ft.

G. H. Vaughn et al No. 1 Eppinger, SW sec. 29-21-4. Comp.; flw. 55 B.P.H.; T.D. 5,129 ft.

Concordia Parish

Coastal Mineral & Dev. Co. No. 1 Winsten, sec. 23-7-9e. Drlg. 2,010 ft. (cor.).

Edward A. Addy et al No. 1 Posternack, NW SW sec. 49-8n-93. S.D. 50 ft.

De Soto Parish

Clear Lake Oil Co. No. 1 J. A. Woolums, NW sec. 29-12-12. S.D. 2,540 ft.

Pullman Oil Co. No. 4 Ramsey, NE SW NW sec. 36-11-11. S.W.; abd. 3,060 ft.

LaSalle Parish

Buck Granshaff et al No. 1 Russell, sec. 25-10-1e. W.O.S.R.; T.D. 1,514 ft.

Lincoln Parish

Gigantic Oil Co. No. 1 R. L. Sanderson, NW SE NW sec. 30-18-1w. 16-in. 179 ft.

T. L. James No. 1 J. J. Spence, SW NE sec. 11-17-4. Drlg. 6,845 ft.

Ludel Oil Corp. No. 1 Gill, NE NE NW sec. 36-20-2w. Drlg. 5,525 ft.

Lyons & Neely No. 2 H. W. Patton, S½ SW NW sec. 6-20-4. Comp.; flw. 33 B. P.H.; T.D. 5,335 ft.

Lyons & Neely No. 2-B H. E. Patton, C S½ NE SW sec. 6-20-4. Cg. 5,317 ft.

Magnolia Pet. Co. No. 1 F. Corbin, W½ NE NE sec. 6-20-4. Comp.; flw. 400 bbls. in 21 hrs.; T.D. 5,336 ft.

Magnolia Pet. Co. No. 2 F. Corbin, NE cor. sec. 6-20-4. Drlg. 5,010 ft.

E. H. Moore, Inc. No. 1 Arcadia Comm. Bank, C NW sec. 22-18-5. Drlg. 4,375 ft.

Red Iron Drlg. Co. No. 1 T. F. Patton, NW SW NE sec. 6-20-4. 5½-in. 5,230 ft.; T.D. 5,256 ft.

Red River Parish

Gulf Ref. Co. No. 42 E. T. Robinson, NW sec. 25-13-11. Tstg. 2,552 ft.

W. J. Hunter No. 2 Long Bell Lbr. Co., SW NW sec. 20-19-9. S.D. 4,004 ft.

Jones et al No. 1 Morston, SW SE sec. 14-13-11. W.O.S.R. 2,547 ft.

J. C. Prine No. 1 Haynes, SW sec. 20-13-10. W.O.S.R. 2,555 ft.

T. S. Shaw No. 5 Wilkinson, NW SE SE sec. 4-12-10. Tstg.; T.D. 2,583 ft.

W. K. Williams No. 2 Padock, SE SW NW sec. 33-13-11. 6⅝-in. 2,350 ft.; T.D. 2,500 ft.

Webster Parish

V. L. Foster No. 2 J. M. Mixon, SE sec. 21-21-10. Cg. 5,715 ft.

Magnolia Pet. Co. No. 4 Aarnes-Cox, NW sec. 22-21-10. Drlg. 7,440 ft.

Ohio Oil Co. No. 47 Bodcaw Acct. 2, SW SE sec. 15-21-10. Drlg. 8,064 ft.

Ohio No. 1 S. P. D. Covle and W. Cox, SW SW SE sec. 23-21-10. Drlg. 7,256 ft.

Ohio Oil No. 1 T. Crichton, Acct. No. 2, SE NE sec. 21-21-10. Rng. 7-in.; T.D. 8,503 ft.

Ohio No. 7-B R. L. Holloway, 586 ft. N. 756 ft. E. line, sec. 23-21-10. Drlg. 8,061 ft.

A. G. Oliphant et al No. 1 Banks, NE NE sec. 34-21-10. Drlg. 7,574 ft.

Ohio Oil Co. No. 1 D. W. Merritt, SW cor. sec. 14-21-10. Drlg. 7,647 ft.

Standard Oil Co. of La. No. 7 Mrs. M. F. Davis, NE NE NW sec. 23-21-10. Drlg. 6,779 ft.

Standard Oil Co. of La. No. 2-B Mrs. M. E. Gray, NE NE NW sec. 26-21-10. Drlg. 6,920 ft.

United Gas No. 6 Tillman, NE sec. 28-21-10. 13⅜-in. 849 ft.; drlg. 3,677 ft.

Woodley Pet. Co. No. 2-B L. C. Cox. Drlg. 7,591 ft.

SOUTH LOUISIANA FIELDS

Abbeville—Vermilion Parish

Continental Oil Co. No. 1 Brookshire, sec. 66-12s-3e. T.D. 11,909 ft.; stuck D.S.; fsg.

Anse La Butte—St. Martin Parish

Anse La Butte Oil Corp. No. 1 Billeand, sec. 117-9s-5e. Drlg. sh. 50 ft.

Crusader Pet., Inc., sec. 86-9s-5e. R.U.

Crusader Pet. Co. No. 3-B Begnaud. Drlg. sh. 4,012 ft.

Crusader Pet., Inc., No. 1 Patin, sec. 46-9s-5e. 10¾-in. csg. 40C ft.; W.O.C.

Bay St. Elaine—Terrebonne Parish

F. J. LeBlanc No. 2 Wurzlow, sec. 17-22s-18e. S.D. 910 ft.

Bayou Blue—Iberville Parish

Humble O. & R. Co. No. 4 Wilbert, sec. 74-9s-10w. T.D. 4,106 ft.; P.B. sdtrkd.; drlg. sh. 5,010 ft.

Bayou Cocotris—Terrebonne Parish

Shell Pet. Corp. No. 2 Pelican, sec. 19-17s-15e. T.D. 9,495 ft.; 7-in. csg. 9,465 ft.

Shell Pet. Corp. No. 3 Pelican, sec. 19-17s-15e. Core sh. 9,484 ft.

Bayou De Allemands—St. Charles Parish

Amerada Pet. Corp. No. 1 St. Charles Ld. Co., sec. 38-15s-20e. 10¾-in. csg. 2,698 ft.; drlg. sh. 3,658 ft.

Shell Pet. Corp. No. 3-B Realty, sec. 18-17s-15e. 16-in. csg. 117 ft.

Big Lake—Cameron Parish

Union Sulphur Co. No. 1 P. J. Hebert, sec. 18-12s-8w. 6⅝-in. csg. 8,441 ft.; T.D. 9,289 ft.; D.S. stuck.
Union Sulphur Co. No. 2 J. O. Hebert, sec. 18-12s-8w. Drlg. sh. 6,388 ft.

Black Bayou—Calcasieu Parish

Shell Pet. Corp. No. 36 Watkins. Drlg. sh. 4,341 ft.

Bosco—Acadia Parish

Superior Oil Co. No. 1 J. L. Larcade, sec. 34-8s-3e. Drlg. sh. 5,875 ft.

Caillou Island—Terrebonne Parish

Texas Co. No. 52 State, sec. 19-23s-20e. Drlg. sdy. sh. 3,953 ft.

Cameron Meadows—Cameron

Burton-Sutton Oil Co. No. 19 Sch. Ld., sec. 16-14s-13w. Drlg. sh.&L. 3,612 ft.

Charenton—St. Mary Parish

Pan American Prod. Co. No. 1 Dolph, sec. 36-13s-9e. Drlg. sh. 5,612 ft.
Pan American Prod. Co. No. 1 Eucer, sec. 11-13s-9e. Spd.
Pan American Prod. Co. No. 1 Landry, sec. 25-13s-9e. Drlg. sd.&sh. 8,799 ft.
Pan American Ref. Co. No. 4 Laws Realty Co., sec. 30-13s-10e. T.D. 10,066 ft.; fsg.
Pan American Prod. Co. No. 2 South Coast Corp., sec. 31-13s-9w. Drlg. sh. 5,712 ft.
Pan American Prod. Co. No. 1 Veeder sec. 30-13s-10e. T.D. 9,462 ft.; P.B. 2,615 ft.; 7-in. csg. 2,615 ft.; perf. csg. 2,589-91 ft.; made squeeze job; to reperf. csg. P.B. and sdtrkd.; T.D. 2,595 ft.; oil sd.; tstg.

Choctaw—Iberville Parish

Standard Oil Co. No. 10 Grove, sec. 52-9s-11e. T.D. 5,303 ft. in salt; D.S. stck. P.B. 4,650 ft.; sdtrkd.; drlg. sd. 5,004 ft. in sdtrkd. hole.
Standard Oil Co. No. 7 Gay, sec. 52-9s-11e. Cmtd. 13⅜-in. csg. 956 ft.; T.D. 4,694 ft.; run 9⅝-in. csg.; I.P. 500 B.P.D.; 12/64-in. ck.

Darrow—Ascension Parish

Humble O. & R. Co. No. 16 Community, sec. 29-10s-2e. Drlg. sh. 4,612 ft.
Kiva Oil Co. No. 1 Dupiessis, sec. 69-10s-2w. R.U.

Dog Lake—Terrebonne Parish

Texas Co. No. 18 State, sec. 5-22s-16e T.D. 7,606 ft.; P.B. 1,564 ft.; drlg. sdy. sh. 4,881 ft.
Texas Co. No. 20 State, sec. 5-22s-16e. Drlg. sdy. sh. 6,301 ft.

Edgerly—Calcasieu Parish

Crusader Pet., Inc., No. 1 Miller Bros., sec. 27-9s-11w. 7-in. csg. 6,078 ft.; drlg. sh. 6,312 ft.

Four Isle—Terrebonne Parish

Texas Co. No. 9 L. L. & E., sec. 24-21s-16e Drlg. sdy. L. 7,760 ft.

Garden Island—Plaquemines Parish

Texas Co. No. 24 State, sec. 37-23s-33e. Drlg. sdy. sh. 5,128 ft.

Gillis—Calcasieu Parish

Union Sulphur Co. No. 7 Kaufman, sec. 13-9s-8w. T.D. 7,079 ft.; 5-in. csg. 7,052 ft., swbd. 8 W.; P.B. 6,898 ft.
Union Sulphur Co. No. 2 Mary McIvor, sec. 14-9s-8w. R.U.

Hackberry—Cameron Parish

W. T. Burton No. 3 Lewis, sec. 22-12s-10w. R.U.
W. T. Burton No. 1 Porter Ellender, sec. 27-12s-10w. Drlg. sh. 5,570 ft.
M. P. O'Meara No. 1 Rigmaden heirs, sec. 22-12s-10w. Drlg.
Stanolind O. & G. Co. No. 6 Duhon, sec. 22-12s-10w. Drlg. sd.&sh. 3,387 ft.
Stanolind O. & G. Co. No. 8 Carter & Sweeney, sec. 22-12s-10w. R.U.
Stanolind O. & G. Co. No. 10 Carter & Sweeney, sec. 22-12s-10w. Drlg.
Stanolind O. & G. Co. No. 11 Carter & Sweeney, sec. 22-12s-10w. 10¾-in. csg. 1,451 ft.; drlg. sd. 3,912 ft.
Stanolind O. & G. Co. No. 26 Gulf Ld., sec. 22-12s-10w. 10¾-in. csg. 1,644 ft.
Stanolind O. & G. Co. No. 53 State, sec. 22-12s-10w. 10¾-in. csg. 1,930 ft.; T.D. 6,648 ft.; P.B. 4,080 ft.; drlg. sh. 5,700 ft.
Texas Co. No. 23-B State, sec. 12-12s-9w. T.D. 5,448 ft.; P.B. 2,409 ft.; T.D. 7,274 ft.; P.B. to sdtrk.

Lockport-Cameron Parish

Magnolia Pet. Co. No. 35 Miller, sec. 9-10s-9w. Drlg. sh. 4,612 ft.

Jeanerette—St. Mary Parish

Herton Oil Co. No. 1 Banta, sec. 40-13s-9e Set 7-in. csg. 9,768 ft.; T.D. 10,480 ft.; tstg.
Herton Oil Co. No. 5 Roans, sec. 40-13s-9e. T.D. 8,098 ft.; recmtd. csg.

Jennings—Acadia Parish

Frank W. Bennett et al No. 1 Brethern and Christ Church, sec. 41-7s-2w. T.D. 7,107 ft.; D.S. stuck; shot; fsg.
W. T. Burton No. 4 Roboria, sec. 41-9s-3w. Drlg. sh. 600 ft.
Crusader Pet., Inc., No. 1 E. H. Grace, sec. 45-9s-2w. Drlg.
Glassell & Glassell No. 2 McFarland, sec. 41-9s-2w. Drlg. sh. 5,000 ft.
Glassell & Glassell No. 3 McFarlain, sec. 41-9s-3w. T.D. 7,100 ft.; W.O.C.
Glassell & Glassell No. 4 Trushell, sec. 42-9s-3w. Drlg.
Jolly Pet. Co. No. 2 McFarlain, sec. 41-9s-2w. Bldg. drk.
Ladak Oil Co. No. 2 Jennings-Clement, sec. 46-9s-2w. Drlg.
Louisiana Crusader Oil Co. No. 1 Lake Oil fee, sec. 45-9s-2w. P.B. T.D. 3,601 ft.; 7-in. csg. 3,575 ft.; I.P. 420 B.P.D.; ¼-in. ck.
M. P. O'Meara No. 1 Moresi, sec. 41-9s-2w. Drlg.
Jolly Pet. Co. No. 5 Jennings-Haywood, sec. 46-9s-2w. Drlg.
Reiter Foster Oil Co. No. 2 Crusel, sec. 42-9s-2w. R.U.
Shell Pet. Corp. No. 3 Community, sec. 40-9s-2w. R.U.
Stanolind O. & G. Co. No. 19 Houssiere-Latrelle, sec. 47-9s-2w. Spd.
Superior Oil Co. No. 8 Leckelt, sec. 42-9s-2w. Drlg. sh. 3,518 ft.
Superior Oil Co. No. 7 Leckelt, sec. 42-9s-2w. Drlg. sh. 2,985 ft.
Superior Oil Co. No. 4 Jennings-Haywood, sec. 41-9s-2w. Drlg. sh. 5,259 ft.
Superior Oil Co. No. 3 Moresi, sec. 41-9s-2w. T.D. 6,748 ft.; stuck D.S.; sdtrkg. 5,038 ft.

Lafitte—Jefferson Parish

Texas Co. No. 7 L.L.E., sec. 20-17s-24w. Drlg. sh.&L. 6,427 ft.
Texas Co. No. 2 Milling, sec. 20-17s-24e Cd. oil sd. 10,120 ft.
Texas Co. No. 1 State-Bayou Norman, sec. 28-17s-24e. Drlg. sh. 12,053 ft.

Lake Barre—Terrebonne Parish

Texas Co. No. 141 State, sec. 40-21s-19e. S.D. 3,744 ft.

Lake Hermitage—Plaquemines Parish

Gulf Ref. Co. No. 7 Lafourche, sec. 13 18s-25e. T.D. 8,085 ft.; rmg.

Lake Pelto—Terrebonne Parish

Texas Co. No. 13 State, sec. 8-23s-18e. Drlg. sh.&L. 4,356 ft.

Lake Washington—Plaquemines Parish

Humble O. & R. Co. No. 25 Cockrell, sec. 35-20s-26e. Drlg. sh. 5,125 ft.

Lockport—Calcasieu Parish

Magnolia Pet. Co. No. 35 Miller, sec. 9-10s-9w. Drlg. sh. 4,612 ft.

Lake Long—Lafourche Parish

Fohs Oil Co. No. 2 State, sec. 65-17s-19e. R.U.
Fohs Oil Co. No. 3 State, sec. 65-17s-19e. 10¾-in. csg. 2,743 ft.; drlg. sh. 8,570 ft.

New Iberia—Iberia Parish

Wm. Hellis No. 3 Schwing, sec. 57-12s-7. T.D. 5,019 ft.; P.B. and sdtrkd.; salt 5,-509 ft.; P.B. 2,650 ft.; T.D. 3,949 ft.; 7-in. csg. 3,920 ft.; comp.; no gauge.
Texas Co. No. 3 Bryant, sec. 25-12s-7e. R.U.
Wm. Hellis No. 9 Bernard, sec. 54-12s-7e T.D. salt 5,171 ft.; P.B. and sdtrkd.; drlg. sh. 4,312 ft.
Wm. Hellis No. 10 Bernard, sec. 54-12s-7e. R.U.
Wm. Hellis No. 11 Bernard, sec. 54-12s-7e. Drlg. sh. 3,510 ft.
Wm. Hellis No. 6 Bullock-Burke, sec. 25-12s-7e. T.D. 4,817 ft.; P.B. and sdtrkd.; T.D. 4,769 ft.; P.B. 2,700 ft.; W.O.C.
Texas Co. No. 1 Burke, sec. 56-12s-8e. R.U.
Texas Co. No. 4 Duke, sec. 26-2s-7e. R.U.
Texas Co. No. 7-B Hanzen, sec. 54-12s-7e. T.D. 4,546 ft.; P.B. 3,825 ft.; sdtrkd.; drlg. sh. 4,516 ft.

North Crowley—Acadia Parish

Humble O. & R. Co. No. 1 Antonohlenforst, sec. 45-8s-1e. Drlg. sh. 5,300 ft.

Roanoke—Jeff Davis Parish

Humble O. & R. Co. No. 4 Taylor, sec. 72-9s-4w. Drlg. sd.&sh. 8,852 ft.

Sorrento—Ascension Parish

Sorrento Oil Co. No. 1 Friant, sec. 16-19s-4e. R.U.

South Elton—Jeff Davis Parish

Stanolind O. & G. Co.-Amerada Pet. Corp. No. 3-B Calcasieu Natl. Bank, sec. 27-7s-3w. R.U.

South Jennings—Jeff Davis Parish

Loffland Bros. No. 1 Fontenot, sec. 16-10s-3w. Drlg. sh.&L. 5,740 ft.

South Roanoke—Jeff Davis Parish

Union Sulphur Co. et al No. 1 T.R.S Farms Co., sec. 23-10s-4w. T.D. 9,151 ft.; 7-in. csg. on bttm.; perf. csg. 8,500-63 ft.; tstd. dry gas.

Starks—Calcasieu Parish

Capital Oil Co. No. 1 Lutcher-Moore, sec. 24-9s-13w. R.U.
Turnbull et al No. 2 Industrial Lbr. Co., sec. 19-9s-12w. T.D. 4,861 ft.; S.D.

Sulphur—Calcasieu Parish

Union Sulphur Co. No. 847 fee, sec. 29-9s-10w. T.D. 5,570 ft.; 7-in. csg. 5,570 ft.; sanded up; P.B. 4,064 ft.; drlg. sh. in sdtrkd. hole 4,312 ft.
Union Sulphur Co. No. 849 fee, sec. 29-9s-10w. Drlg. sh. 5,212 ft.
Union Sulphur Co. No. 850 fee, sec. 29-9s-10w. Drlg. sh. 5,212 ft.
Union Sulphur Co. No. 851 fee, sec. 29-9s-10w. Spd.

St. Martinsville—St. Martin Parish

Tide Water Oil Co. No. 1-B Smedes, sec. 18-11s-6e. Drlg. sdy. sh. 7,012 ft.

Valentine—Lafourche Parish

Pan American Prod. Co. No. 9-A Harang, sec. 8-17s-20e. Drlg. sd. 5,334 ft.
Pan American Prod. Co. No. 10 Harang, sec. 7-17s-20e. Drlg. sh. 6,977 ft.
Pan American Prod. Co. No. 11 Harang, sec. 8-17s-20e. T.D. 5,426 ft.; 7-in. csg 5,407 ft.

Venice—Plaquemines Parish

Tide Water Oil Co. No. 4 Manhattan Fruit Co., sec. 26-21s-30e. Drlg. sh. 3,512 ft.

Vinton—Calcasieu Parish

Katina Oil Co. No. 2 Vincent, sec. 34-10s-12w. T.D. 4,140 ft.; S.R. hole.
Superior Oil Co. No. 1 Gray, sec. 4-11-12w. T.D. 5,916 ft.; 7⅝-in. csg. 3,907 ft.
Vinton Pet. Co. No. 23 Vincent, sec. 34 10s-12w. Drlg. gbo.&L. 2,512 ft.

White Castle—Iberville Parish

T. D. Humphray No. 1 E. B. Adams, sec. 1-11s-12e. S.D. 6,067 ft.
Shell Pet. Corp. No. 5 Shingle, sec. 12-11s-12e. 10¾-in. csg. 1,400 ft.; drlg. sh. 5,213 ft.

S. LOUISIANA WILDCATS

Acadia Parish

J. E. Dalton No. 1 Setting, sec. 17-7s-1w T.D. 5,106 ft.; fsg.; P.B. 2,785 ft.
Gulf Oil Corp. No. 1 Euclia Broussard, sec. 49-10s-2w. Drlg. sh. 2,386 ft.
Humble O. & R. Co. No. 1 R. A. Sarver, sec. 35-10s-1e. Drlg. sh. 8,941 ft.
Magnolia Pet. Co. No. 1 Duson, sec. 14-8s-2w. Drlg. sh. 6,087 ft.
T. S. Markley No. 1 Daigle, sec. 19-7s-2e Drlg. sh. 6,802 ft.

Calcasieu Parish

D. & D. Oil Co. No. 2 Lutcher-Moore, sec. 1-8s-13w. T.D. 8,340 ft.; run 9⅝-in. csg drlg. plug; csg. collspd.; will P.B. and sdtrk.
Union Sulphur Co. No. 1 J. A. Bel, sec. 10-10s-10w. 10¾-in. csg. 1,216 ft.; drlg. sh. 2,419 ft.
Wheeler Oil Corp. No. 2 Sch. Ld., sec. 16-9s-7w. R.U.

Cameron Parish

Humble O. & R. Co. No. 1 Miami Corp., sec. 8-14s-5w. 20-in. pipe set 188 ft.; drlg. sh. 3,132 ft.
Pure Oil Co. No. 2 State, sec. 14-13s-3w T.D. 9,445 ft.; abd.

Cameron Parish—Gulf of Mexico

Superior Oil Prod. Co. et al No. 1 State Gulf of Mexico, 3,800 ft. W, 6,200 ft. S of SE cor. of irregular sec. 4-15s-8w Spd.; S.D. to drill wtr. well.

East Baton Rouge Parish

Cavalier Oil Co. No. 1 Elliott, sec. 34-2e. T.D. 6,127 ft.; D.S. stuck.

Iberia Parish

Texas Co. No. 2-B Vermilion Bay, sec. 20-16s-5e. Drlg. sh. 6,020 ft.

Jefferson Parish

Triangle Oil Co. No. 1 Conroe, sec. 12-12s-11e. T.D. 3,752 ft.; D.S. stuck.

Jefferson Davis Parish

Continental Oil Co. No. 1 Faye, sec. 31-10s-3w. Loc.
Continental Oil Co. No. 1 M. H. Van Geffen, sec. 32-10s-3w. Abd. loc.
Union Sulphur Co. No. 1 Calcasieu National Bank, sec. 12-9s-6w. Drlg. sh. 3,934 ft.

Lafourche Parish

Amerada Pet. Corp. No. 1 South Coast Corp., sec. 34-15s-19e. Drlg. sh. 7,686 ft.
Gulf Oil Corp. No. 3 State P.P., sec. 36 23s-21e. Recvd. 1,000 ft. of oil on 6-min D.S.T. at 6,749-6,846 ft.; 9⅝-in. csg 6,832 ft.; drlg. 7,121 ft.; rec. 2,000 ft. P.L.O. on D.S.T. 6,958-70 ft.; T.D. 7,269 ft.; P.B. 6,971 ft.; drlg. plug.
Wm. Helis No. 2 City of New Orleans sec. 19-23s-23e. R.U.

Plaquemines Parish

Gulf Oil Corp. No. 3 State (Jackson dist) Drlg. sdy. sh. 6,612 ft.
Humble O. & R. Co. No. 9 Orleans Levee Bd., sec. 12-18s-15e. Drlg. sd.&L. 940 ft.

St. Bernard Parish

Southern Sulphur Co. No. 2 State Lake Borgne, sec. 38-14s-15e. 13⅜-in. csg. 308 ft.; S.D. 3,440 ft.

St. Martin Parish

Texas Co. No. 10 St. Martin, sec. 15-8s-7e. Drlg. sd.&sh. 6,680 ft.

St. Mary Parish

Texas Co. No. 1 State-Bateman Lake, sec 21-16s-12e. 7⅝-in. csg. 10,515 ft.; drlg. sdy. sh. 11,597 ft.

Terrebonne Parish

Barnsdall Oil Co. No. 1 Dilbert, Stark & Brown Sur., sec. 110-16s-15e. Spd.

Vernon Parish

Castor Creek Drlg. Co. No. 1 Llano Del Rio, Inc., sec. 34-2n-9w. Drk.

TEXAS

Week Ending October 9

GULF COAST FIELDS

Hastings—Brazoria County

Humble O. & R. Co. No. 1-D W. F. Beers, Perry & Austin Sur. Drlg. sh.&L. 2,-752 ft.
Humble O. & R. Co. No. 9-B Brown, Perry & Austin Sur. T.D. 6,080 ft.; run csg.
Humble O. & R. Co. No. 8 R. D. Hacen, Wm. Henry Sur. T.D. 6,080 ft.; W.O.C.
Humble O. & R. Co. No. 1 Phillips, Perry & Austin Sur. R.U.
Humble O. & R. Co. No. 8 South Texas Grain Co., Perry & Austin Sur. R.U.
Humble O. & R. Co. No. 1 W. C. Tullos, H.T.&B. Sur. No. 29. T.D. 6,080 ft.; 5½-in. csg. 5,890 ft.; I.P. 27 B.P.H.; ¼-in. ck.
Navarro Oil Co. No. 1-A Callahan, H.T.& B. Sur. No. 29. Drlg. sh. 4,712 ft.
Pearland Oil Co. No. 1 C. H. Alexander, H.T.&B. Sur. No. 28. T.D. 6,080 ft.; perf. csg. 6,035-75 ft.; I.P. 623 B.P.D.; ¼-in. ck.
Pearland Oil Co. No. 2 C. H. Alexander, H.T.&B. Sur. No. 28. Drk.
Producers Inv. Co. No. 1 C. H. Alexander, H.T.&B. Sur. No. 28. T.D. 6,070 ft.; tstg.
Producers Inv. Co. No. 2 Alexander, H. T.&B. Sur. No. 28. R.U.
Stanolind No. 6 Brown, H.T.&B. Sur. No. 29. R.U.
Stanolind O. & G. Co. No. 3-B W. H. Avitts, H.T.&B. Sur. Drk.
Stanolind O. & G. Co. No. 3 Barnett, H. T.&B. Sur. No. 29. T.D. 6,100 ft.; run 7-in. csg.
Stanolind O. & G. Co. No. 5 Blount, B. T. Masterson Sur. Drlg. sh. 5,073 ft.
Stanolind O. & G. Co. No. 7-B C. D. Brown. T.D. 5,570 ft.; 7-in. csg. 5,569 ft.
Stanolind O. & G. Co. No. 3 Condon, H. T.&B. Sur. No. 29. T.D. 5,886 ft.; perf. 5,883-85 ft.; comp.; no gauge.
Stanolind O. & G. Co. No. 4 Condon, H. T.&B. Sur. No. 29. Drlg. sh.&sd. 3,315 ft.
Stanolind O. & G. Co. No. 11-B Curkett, H.T.&B. Sur. No. 30. T.D. 6,079 ft.; tstg.
Stanolind O. & G. Co. No. 15-B M. Curkett, H.T.&B. Sur. No. 30. Drlg. sh. 4,430 ft.
Stanolind O. & G. Co. No. 14-B H. H. Ford, H.T.&B. Sur. No. 29. R.U.
Stanolind O. & G. Co. No. 8 R. O. Furface, B.B.B.&C. Sur. T.D. 6,080 ft.; I.P. 548 bbls. P.L.O. per day; ¼-in. ck.
Stanolind O. & G. Co. No. 6 J. F. Law, H. T.&B. Sur. No. 36. T.D. 6,080 ft.; I.P. 615 bbls. P.L.O. per day; ¼-in. ck.
Stanolind O. & G. Co. No. 2 Matsushita, H. Stevens Sur. T.D. 5,930 ft.; 7-in. csg. 5,926 ft.
Stanolind O. & G. Co. No. 2-C H. Moore, R. A. Magee Sur. T.D. 6,080 ft.; W.O.C.
Stanolind O. & G. Co. No. 4-C Moore, R. A. Magee Sur. R.U.
Stanolind O. & G. Co. No. 1 Peck, H.T.& B. Sur. No. 37. Drk.
Stanolind O. & G. Co. No. 9 L. D. Shaw, H. T.&B. Sur. No. 36. T.D. 5,920 ft.; I.P. 440 bbls. in 19 hrs.; ¼-in. ck.
Stanolind O. & G. Co. No. 1 J. H. Soarks, H.T.&B. Sur. No. 29. Drlg. sh. 2,262 ft.
Stanolind O. & G. Co. No. 2 W. B. Thornton, H.T.&B. Sur. No. 29. Drlg. sh. 5,060 ft.
Stanolind O. & G. Co. No. 13 B. L. Turner, A.C.H.&B. Sur. Drk.
Stanolind O. & G. Co. No. 16 Turner, A. C.H.&B. Sur. No. 1. Drlg. sh.&L. 3,230 ft.
Stanolind O. & G. Co. No. 11 B. I. Turner, A.C.H.&B. Sur. No. 1. 10¾-in. csg. 1,242 ft.; T.D. 6,080 ft.; perf. csg. 6,058-53 ft.
Stanolind O. & G. Co. No. 12 Turner, A. C.H.&B. Sur. No. 1. T.D. 6,080 ft.; I.P. 313 bbls. in 13 hrs.
Stanolind O. & G. Co. No. 2 Wagner. Drk.
Stanolind O. & G. Co. No. 9 Williams, A. C.H.&B. Sur. T.D. 6,080 ft.; run csg.

Lockridge—Brazoria County

Gulf Oil Corp. No. 3 Baker, J. W. Hall Sur. T.D. 6,365 ft.; I.P. 624 B.P.D.; ¾-in. ck.
Gulf Oil Corp. No. 4 Carrie Baker, J. W. Hall Sur. R.U.
Gulf Oil Corp. No. 1 Great Southern, E. D. Robertson Sur. Core sd. 6,870 ft.
Kirby Pet. Co. No. 2 Carrie Baker, J. W. Hall Sur. 10¾-in. csg. 1,400 ft.; drlg. sh. 5,338 ft.
McCurdy and Johnson No. 1 State, Brazos River. Drlg. sh. 2,812 ft.
Shell Pet. Corp. No. 4 Ramsey, J. W. Hall Sur. T.D. 6,373 ft.; W.O.C.

Manvel—Brazoria County

Texas Co. No. 26 Houston Oil Field Assn., A.C.H.&B. Sur. No. 91. Drlg. sd.&sh. 4,-928 ft.

Old Ocean—Brazoria County

Harrison & Abercrombie No. 2 Armstrong, Polly & Chance Sur. R.U.
Harrison & Abercrombie No. 1 Land and Barnes, C. Breen Sur. R.U.
Harrison & Abercrombie No. 1 Smith, C. Breen Sur. 9⅝-in. csg. 7,016 ft.; drlg. sh. 9,925 ft.

Sandy Point—Brazoria County

H. J. DeArman No. 1 Edmundson, D. Talley Sur. Cg. sh. 6,418 ft.
H. J. DeArman No. 3 Fite, D. Talley Sur. Loc.
Stanolind O. & G. Co. No. 2 Fite, D. Talley Sur. Spd.

West Columbia—Brazoria County

Texas Co. No. 1 Gulf Oil Corp. fee, G. Tennille Sur. T.D. 5,483 ft.; rmg.
Texas Co. No. 87 Hogg, Tennille Lge. Drlg. sd.&bldrs. 1,393 ft.
Texas Co. No. 3 Phillips, G. Tennille Sur.

T.D. 5,800 ft.; P.B. 5,670 ft.; 7-in. csg. 5,577 ft.

Calhoun—Heyser—Victoria County

Blanco Oil Co.-Buchanan No. 2 Dunnwoody, A. Sisneros Sur. Drlg. sh. 800 ft.

Blanco Oil Co.-Buchanan No. 1 R. B. Morris, A. Sisneros Sur. T.D. 5,494 ft.; perf. csg. 5,487-94 ft.; I.P. 192 B.P.D.; 5/32-in. ck.

Geo. Echols No. 1 W. H. Bennett, J. Galban Sur. R.U.

George Echols No. 2 Lander, J. Galban Sur. Drlg. sh. 5,120 ft.

Gulf Oil Corp. No. 1 Schultz, J. E. Galban Sur. Drlg. rk. 5,192 ft.

Gulf Oil Corp. No. 1 T. P. Traylor, J. E. Galban Sur. T.D. 5,580 ft.; 7-in. csg. 5,580 ft.; flwd. oil; gas-oil ratio high; killed to W.O.

Humble O. & R. Co. No. 4 H. T. Marshall, A. Sisneros Sur. R.U.

Humble O. & R. Co. No. 16-B P. H. Welder, A. Sisneros Sur. T.D. 5,597 ft.; 5½-in. csg.

Humble Oil-Plymouth Oil Co. No. 17-B Welder, A. Sisneros Sur. R.U.

Humble O. & R. Co. No. 18-B P. H. Welder, A. Sisneros Sur. R.U.

Humble O. & R. Co. No. 19-A Welder, J. M. Rios Sur. T.D. 5,490 ft.; I.P. 324 B.P.D.; ⅞-in. ck.

Magnolia Pet. Co. No. 2 O. M. Lander, J. E. Galban Sur. T.D. 5,600 ft.; 7-in. csg. 5,740 ft.; I.P. 31 B.P.D.; 9/64-in. ck.

Magnolia Pet. Co. No. 4 Lander, J. Galban Sur. R.U.

Normandie Oil Co. No. 7 J. G. Cook, A. Sisneros Sur. T.D. 5,594 ft.; 7-in. csg. 5,594 ft.; tstg.

Normandie Oil Co. No. 8 J. G. Cook, A. Sisneros Sur. R.U.

Portilla Drlg. Co. No. 16-C P. H. Welder, A. Sisneros Sur. Drlg. sh.&L. 4,660 ft.

Sinclair Prairie Oil Co. No. 4 W. H. Bennett, A. Sisneros Sur. T.D. 5,749 ft.; 7-in. csg. 5,749 ft.; tstg.

Sun Oil Co. No. 3 W. N. Coffey, J. Galban Sur. R.U.

Anahuac—Chambers County

Humble O. & R. Co. No. 14 Johnson, sec. 47, H.&T.C. Sur. 5½-in. csg. 7,118 ft.; T.D. 7,125 ft.; comp. for gas well.

Humble O. & R. Co. No. 29 Middleton, sec. 58. T.D. 7,090 ft.; 5½-in. csg. 7,062 ft.

Humble O. & R. Co. No. 10 Zappe, sec. 51, H.&T.C. Sur. 9⅝-in. csg. 1,023 ft.; T.D. 7,080 ft.; run 7-in. csg.

Cotton Lake—Chambers County

Humble O. & R. Co. No. 1 Casey, S. Barrow Sur. R.U.

Joe Ludin et al No. 1 Lawrence, Solomon Barrow Sur. 10¾-in. csg. 541 ft.; drlg. sh. 6,248 ft.

Texas Crusader Oil Co. No. 9 Kilgore, J. Townsend Sur. Drlg. sdy. sh. 5,412 ft.

Seabreeze—Chambers County

Sun Oil Co. No. 3 Acorn, H.T.&B. Sur. 103. 13¾-in. csg. 1,393 ft.; T.D. 8,494 ft.; cmtd. 9⅝-in. csg. on bttm.; drlg. sd. 8,729 ft.

Sun Oil Co. No. 1 Jackson, Yarbo Sur T.D. 8,830 ft.; 5-in. csg. 8,805 ft.; set screen; swbd. S.W.

Turtle Bay—Chambers County

Stanolind O. & G. Co. No. 3 Silva, S. Burney Sur. Drlg. sh. 3,624 ft.

Orchard—Fort Bend County

Gulf Oil Corp. No. 53 Moore, J. Frazier Sur. Drlg. sh. 5,217 ft.; no report.

Gulf Oil Corp. No. 55 J. M. Moore, J. Frazier Sur. R.U.

Dickinson—Galveston County

Atlantic Ref. Co. No. 4 Sealy Hutchins, P. G. Merritt Sur. Spd.

Frank Bennett No. 3 Way, P. G. Merritt Sur. R.U.

Coast Pet. Co. No. 8 Stewart, W. K. Wilson Sur. R.U.

J. K. Hughes Oil Co. No. 1 J. C. Ecret, W. K. Wilson Sur. Drk.

Humble O. & R. Co. No. 4-A Maco Stewart, W. K. Wilson Sur. T.D. 8,948 ft.; 7-in. csg. 8,925 ft.; I.P. 720 B.P.D.; ¼-in. ck.

Humble O. & R. Co. No. 5-A Stewart, W. K. Wilson Sur. Drlg. sh. 2,076 ft.

Pure Oil Co. No. 2-A Sealy Hutchins, P. G. Merritt Sur. Drlg. sh. 2,112 ft.

Pure Oil Co. No. 1 Sam Levine, W. G. Banks Sur. Bldg. drk.

Stanolind O. & G. Co. No. 3 Damiani, W. K. Wilson Sur. T.D. 8,472 ft.; P.B.; T.D. 8,156 ft.; P.B. and sdtrkd.; T.D. 8,918 ft.; run 7-in. csg.

High Island—Galveston County

Stanolind O. & G. Co. No. 10 B.&O., M. Dunman Sur. 10¾-in. csg. 1,315 ft.; drlg. sd., sh.&L. 6,244 ft.

Stanolind O. & G. Co. No. 63 Cade, M. Dunman Sur. 10¾-in. csg. 1,311 ft.; drlg. sh. 4,140 ft.

Hitchcock—Galveston County

N. W. Hunter No. 1 Stewart Title Guaranty Co., J. D. Moore Sur. Drlg. sh. 4,087 ft.

Merit Oil Co. No. 1 Stewart, J. B. Moore Sur. 10¾-in. csg. 1,075 ft.; drlg. sh. 3,615 ft.

Silsbee—Hardin County

Republic Prod. Co.-Houston Oil Co. No. 22 Brooks, G. W. Brooks Sur. T.D. 6,920 ft.; 7-in. csg. 6,915 ft.; showed S.W.; P.B. 6,903 ft.; perf. 6,910-13 ft.; reset screen and lnr.

Republic Prod. Co.-Houston Oil Co. No. 23, G. W. Brooks Sur. Make D.S.T. 6,980-6,910 ft.

Republic Prod. Co.-Houston Oil Co. No. 24 Brooks, G. W. Brooks Sur. R.U.

Friendswood—Harris County

Humble O. & R. Co. No. 2 Beamer, T. Choate Sur. T.D. 6,135 ft.; S.W. sd.; P.B. 6,100 ft.; 5½-in. csg. 6,032 ft.; flwd. 158 bbls. fluid, 26% S.W.; P.B. 6,070 ft.

Humble O. & R. Co. No. 3 Beamer, T. Choate Sur. R.U.

Humble O. & R. Co. No. 1 Kiesling, T. Choate Sur. R.U.

National Standard Oil Co. No. 1 Coward, Perry & Austin Sur. Loc.

Humble—Harris County

John Deering No. 1 Wm. Lee, E. Rhule Sur., 5,000-ft. test. T.D. 5,440 ft.; fsg.

Mykawa—Harris County

H. C. Cockburn and Hargrove No. 1 Minnetex, Wm. Lovett Sur. T.D. 4,912 ft.; 5½-in. csg. 4,912 ft.

South Houston—Harris County

Stanolind O. & G. Co. No. 2 H. L. Bennett et al, Unit 13, H.T.&B. Sur. No. 6. T.D. 4,068 ft.; 5¾-in. csg. 4,051 ft.; P.B. 3,900 ft.; P.B. 1,561 ft.; drlg. sh. 3,220 ft.

Tomball—Harris County

Humble O. & R. Co. No. 2 Kleb, J. House Sur. Drlg. sh. 5,505 ft.

Humble O. & R. Co. No. 1 R. Riesenberg, J. Pruitt Sur. T.D. 5,560 ft.; 5½-in. csg. 5,553 ft.

Mabee Drlg. Co. No. 3 W. Baker, J. House Sur. T.D. 5,589 ft.; P.B. 5,551 ft.; perf. 5,558-61 ft. and 5,554-56 ft.

Shell Pet. Corp. No. 1 Alsobrook, J. Pruitt Sur. T.D. 5,575 ft.; run 5-in. csg.

Texas Co. No. 4 Sam Lewis, J. Pruitt Sur. T.D. 5,552 ft.; P.B. 2,850 ft.; drlg. sh. 4,797 ft.

Ganado—Jackson County

Texas Co. No. 1 Mortg. Ld. & Inv. Co., Morris & Cummings Sur. No. 3. R.U.

Amelia—Jefferson County

Humble O. & R. Co. No. 9 T. H. Crook, C. Williams Sur. T.D. 6,778 ft.; 5½-in. csg. 6,775 ft.

Humble O. & R. Co. No. 10 Crook, C. Williams Sur. R.U.

Humble O. & R. Co. No. 5 Fitzgerald, C. Williams Sur. Loc.

Humble O. & R. Co. No. 1 S. L. Guinn, C. Williams Sur. R.U.

Humble O. & R. Co. No. 12 Guinn, C. Williams Sur. Drk.

Humble O. & R. Co. No. 11 J. H. Phelan, C. Williams Sur. T.D. 6,777 ft.; 5½-in. csg. 6,771 ft.; I.P. 22 B.P.H.; ¼-in. ck.

Humble O. & R. Co. No. 12 Phelan, C. Williams Sur. Drk.

Humble O. & R. Co. No. 2-C Pinchback, C. Williams Sur. R.U.

Glenn H. McCarthy No. 3-B Longe, H. Williams Sur. R.U.

Stanolind O. & G. Co. No. 1 Keith, H. Williams Sur. R.U.

Stanolind O. & G. Co. No. 7 McCormick, H. Williams Sur. R.U.

Stanolind O. & G. Co. No. 7 Sargl, H. Williams Sur. T.D. 6,435 ft.; 7-in. csg. 6,016 ft.; perf. csg. 5,980-84 ft.; P.B. 5,961 ft.; perf. csg. 5,976-80 ft.; comp. for dry gas well.

Sun Oil Co. No. 2 Galley, A. Houston Sur. T.D. 5,902 ft.; P.B. 5,894 ft.; sdtrkd.; perf. csg. 5,635-50 ft.; comp. for gas well.

Big Hill—Jefferson County

Stanolind O. & G. Co. No. 2 May Fitzhugh, Wm. McFadden Sur. T.D. 4,047 ft.; 10¾-in. csg. 4,040 ft.; drlg. sh. 4,256 ft.; (cor.).

Stanolind O. & G. Co. No. 4-A Pinkin, T.&N.O. Sur. Drlg. sdy. sh. 4,830 ft.

Fannett—Jefferson County

Gulf Oil Corp. No. 1 Junker-Spencer, W. H. Smith Sur. Drlg. sh. 6,312 ft.

LaBelle—Jefferson County

Sun Oil Co. No. 1 John Ward, 933 ft. S of No. 2 Broussard, Wm. Burton Sur. 18⅝-in. csg. 109 ft.; 9⅝-in. csg. 8,538 ft.; 7-in. csg. 9,951 ft.; T.D. 10,147 ft.; cmtd. off bttm.; drld. cmt. to 10,060 ft.; run 2½-in. tbg. to test; came in as gas well; C.P. 4,200 lbs.; killed; pulled tbg.

Nome—Jefferson County

Shell Pet. Corp. No. 4-A Texas Public Service Co., W. H. Aldridge Sur. R.U. as relief well; drlg. sh. 1,328 ft.

Sun Oil Co. No. 2 Tindall, A. Horton Sur. T.D. 5,659 ft.; 7-in. csg. 5,645 ft.

Sun Oil Co. No. 7 Long, Blair Sur. 10¾-in. csg. 1,068 ft.; T.D. 6,043 ft.; 5¾-in. csg. 6,002 ft.; comp. for gas well.

Cleveland—Liberty County

Gulf Oil Corp. No. 2-C Kirby Lbr. Co., J. Pleasants Sur. R.U.

Hankamer—Liberty County

Gulf Oil Co. No. 25 E. W. Boyt, Amos Allen Sur. Drlg. sh. 7,112 ft.

Hardin—Liberty County

Jack Frazier No. 1-A Lynott & Buffam, J. Robeson Sur. 10¾-in. csg. 1,078 ft.; T.D. 7,792 ft.; P.B. 6,000 ft.; to sdtrk.; abd.

J. W. Frazier No. 1-B Lynott and Buffman, J. Robeson Sur. Loc.

Gulf Oil Corp. No. 1 V. B. Hinson, H. B. Johnston Sur. M.I.M.

Shell Pet. Corp. No. 1 Cochran, H. B Johnson Sur. T.D. 7,616 ft.; 5-in. csg. 7,603 ft.; I.P. 709 bbls. P.L.O. per day; ¼-in. ck.

Shell Pet. Corp. No. 1 Hanchey, H. B. Johnson Sur. R.U.

Strake Pet. Co. No. 1 W. T. Finley, A. B. Hardin Sur. 10¾-in. csg. 1,200 ft.; drlg. sh. 6,997 ft.

Woodley Pet. Co. No. 3-B McMurty, H. B. Johnson Sur. Cg. 7,557 ft.

Hull—Liberty County

Houston Prod. Co. No. 3 J. C. Baldwin, J. Devore Sur. T.D. 5,300 ft.; abd.

Texas Co. No. 8 Barrow fee, J. Devore Sur. Drlg. sh. 4,022 ft.

Texas Co. No. 10 Hannah, J. Devore Sur. Loc.

South Call—Liberty County

Houston Oil Co.-Republic Prod. Co. No. 2 Peavy-Moore Lbr. Co., sec. 42, H.&T.C. Sur. 16-in. pipe 58 ft.

Bay City—Matagorda County

Hamman Expl. Co. No. 1 H. E. Thompson, Hall Sur. Core sd.&sh. 8,110 ft.; no report.

Buckeye—Matagorda County

United North & South Dev. Co., B. Cotton Sur. T.A.; loc.

United North & South Development Co No. 1 G.B.M., Cotton Lge. T.D. 8,667 ft.; 7-in. csg. 8,667 ft.; perf. csg. 7,850-80 ft.; S.D.

Markham—Matagorda County

Harrison & Abercrombie No. 1-B Kountze, H. Parker Sur. Drlg. sh. 2,412 ft.

Palacios—Matagorda County

Atlantic-McCarthy No. 3 Foley Ld. Co., L. Goodwin Sur. Drk.

Atlantic-McCarthy No. 2 Palacios State Bank, L. Goodwin Sur. Drlg. sh. 7,510 ft.

Glenn McCarthy No. 2 Foley, L. Goodwin Sur. T.D. 8,590 ft.; made squeeze job 8,530-50 ft.; W.O.C.

Glenn McCarthy No. 1 W. M. Rohls, sec 10, L. Goodwin Sur. T.D. 8,843 ft.; stuck D.S. fsg.

Sun Oil Co. No. 1 Bay Shore Farms, Lewis Goodwin Sur. Core sdy. sh. 9,937 ft.

Van Vleck—Matagorda County

Skelly Oil Co. No. 14-B Cobb, M. Cummins Sur. Drlg. sh. 8,097 ft.

Orange—Orange County

Tillery & Ryan No. 1 Chesson, Wm. Dyson Sur. 10¾-in. csg. 1,180 ft.; drlg. sd. 1,620 ft.

Port Neches—Orange County

Texas Co. No. 6 W. H. Starks, W. E. Hall Sur. R.U.

Livingston—Polk County

Gem Oil Co. No. 5 Kavanaugh, A. Viesca Sur. R.U.

Segno—Polk County

Gulf Oil Corp. No. 8 Wing, sec. 14, I.&G N. Sur. T.D. 6,269 ft.; recvd. 125 lbs. pres.; 6 thribbles oil on D.S.T. 6,258-69 ft.

Rajo Oil Co. No. 2 Wing, I.&G.N. Sur., sec. 15. T.D. 5,264 ft.; I.P. 674 B.P.D.; ¼-in. ck.

Tomoconnor—Refugio County

Hewitt & Daugherty No. 58 Lambert, Swisher Sur. No. 6. T.D. 5,918 ft.; rmg.

Hewitt & Daugherty No. 59 Lambert, Swisher Sur. No. 8. T.D. 5,910 ft.; run Schlumberger survey.

Spurger—Tyler County

Republic-Houston Oil Co. No. 5 Hurd fee, N. Hurd Lge. Drlg. sdy. sh. 7,067 ft.

Keeran—Victoria County

Gulf Oil Corp. No. 12 G. R. Keeran Est. Drlg. sh. 1,220 ft.

Union Oil Co. No. 7 Keeran, M. DeLeon Sur. Drlg. sh. 1,210 ft.

Placedo—Victoria County

Westgate Oil Co. et al No. 7 Mikeska, S. A.&M.G. Sur., Lot 74. T.D. 4,776 ft.; I.P. 130 B.P.D.; ⅞-in. ck.

Telfener—Victoria County

Gulf Oil Corp. No. 1 Mahon and Buhler, W. C. Carroll Sur. Drlg. sh. 5,707 ft.

Clay Creek—Washington County

Sun Oil Co. No. 7 Droeger, J. F. Perry Sur. T.D. 4,410 ft.; fsg.

Five Corners—Wharton County

Texas Co. No. 10-B Pierce Est., J. Caldwell Sur. T.D. 1,140 ft.; W.O.C.

Louise—Wharton County

Pure Oil Co. No. 5 Lancaster, Morris & Cummings Sur. Drlg. sh. 2,010 ft.

Magnet—Wharton County

Atlantic Ref. Co. No. 5-B Cockburn, Smith & McKenzie Sur. Cg. 5,505 ft.

Humble O. & R. Co. No. 2 Cockburn, Smith & McKenzie Sur. 7-in. csg. 5,534 ft.; T.D. 5,545 ft.; P.B. 5,538 ft.; rng. tbg. to test.

Peyton Bros. No. 1 Gish, Lot 2, Blk. 84, M.L.T. Co. Subd., Smith & McKenzie Sur. 10¾-in. csg. 1,112 ft.; T.D. 5,529 ft.; 7-in. csg. 5,529 ft.; pulling screen and lnr.; drld. to 5,537 ft.; I.P. 2 B.P.H.; ⅛-in. ck.

Texas Crusader Oil Co. No. 2 H. C. Cockburn, Smith & McKenzie Sur. 10¾-in. csg. 1,155 ft.; T.D. 5,541 ft.; comp.; no gauge.

Pickett Ridge—Wharton County

Gilcrease Oil Co. No. 1 W. W. Duson, Gifford Sur. R.U.

Texas-Crusader Oil Co. No. 2 J. F. Kubella et al, G. C. Gifford Sur. 10¾-in. csg. 1,118 ft.; T.D. 4,710 ft.; 5½-in. csg. 4,663 ft.

Withers—Wharton County

Texas Co. No. 36-C Pierce Est., Wm. Pettus Sur. T.D. 5,553 ft.; 7-in. csg. 5,547 ft.; I.P. 100 B.P.D.; ¼-in. ck.

Texas Co. No. 38-C Pierce, J. Caldwell Sur. Drlg. sd.&L. 4,330 ft.

Texas Co. No. 39-C Pierce, J. Caldwell Sur. R.U.

Texas Co. No. 2 A. C. Thompson, Wm. Pettus Sur. T.D. 5,548 ft.; 7-in. csg. 5,542 ft.; I.P. 169 bbls. in 19 hrs.; ⅞-in. ck.

GULF COAST WILDCATS

Brazoria County

Pure Oil Co. No. 1 W. A. Smith, S. F. Austin Sur. R.U.

Chambers County

Merit Oil Co. No. 1 T. and M. Wright, C. Smith Sur. 10¾-in. csg. 1,302 ft.; cg. sh. 7,412 ft.

Fort Bend County

Windward Oil Co. No. 1 P. W. Sims, sec. 1, H.&T.C. Sur. 10¾-in. csg. 995 ft.; drlg. sd. 5,810 ft.

Galveston County

R. R. Gray et al No. 1 Eidman, Anthony Hatch Sur. R.U.

Hardin County

Humble O. & R. Co. No. 1 Shone, S. R. Fisher Sur. Drlg. sh. 5,011 ft.

Harris County

Medford and Burke No. 1 W. A. and O. C. Pruitt, Gilbert Brooks Sur. Drlg. sh. 4,537 ft.

Jackson County

Magnolia Pet. Co. No. 1-A West ranch, R. Musgquez Sur. Bldg. drk.

Jefferson County

Shell Pet. Corp. No. 1 W. P. McFaddin, S. A. Pace Sur. No. 2. Bldg. road.

Liberty County

Humble O. & R. Co. No. 2 Sabine Tram, Malinda Whittington Sur. (Devers area). Drlg. sh. 8,505 ft.

Matagorda County

Continental Oil Co. No. 2 Hawkins Est., D. McCarty Sur. Abd. 9,027 ft.

Sun Oil Co. No. 1 Fred Robbins, C. H. Vandeveer Sur. Loc.

Refugio County

Hogan Oil Co. No. 1 Kelley, M. & A. Roache Sur. Drlg. sh. 3,512 ft.

San Jacinto County

J. W. Oliphant et al No. 12 Gibbs Bros. Lbr. Co., C. McKem Sur. R.U.

Tyler County

Thompson Drlg. Co. and J. C. Bonham, Emily Smith Sur. T.D. 1,500 ft.; abd.

Victoria County

Stanolind O. & G. Co. No. 1 Henderson & Pickering, E. Benavides Sur. Core sd. 6,324 ft.

Trinity County

Gossage-Green and Thompson No. 1 R. E. Thompson, J. A. Hickey Sur. Drk.

Waller County

J. Brian Eby et al No. 1 Wm. Rice Institute, H. Stephens Sur. Loc.

Humble O. & R. Co. No. 1-A South Tex. Dev. Co., Wm. Hillhouse Sur. Loc.

Washington County

K. D. Harrison and C. E. Starr No. 1 Charles and Wm. Ellerman, Wm. Bridges Lge. 13-in. csg. 290 ft.

Walker County

G. C. Dixon No. 1 Morgan, J. Ford Sur. Drk.

W. B. Gossage et al No. 1 Carey Ld. & Dev. Co., D. McDonald Sur. S.D. 2,220 ft.

Wharton County

Buch & Holt No. 1 Kaener, F. C. Reynolds Sur. 10¾-in. csg. 620 ft.; S.D. 4,173 ft.

S. W. TEXAS WILDCATS

Atascosa County

Brown & Bell No. 1 Atkins, 920-ac. tr., Sur. 3, Sd. 4,638-54 ft.; S.G.; cg. 4,847 ft.

L. W. Steiren No. 1 Crawford, 4 mi. W of Anchorage. Drlg. 1,927 ft.

Bastrop County

J. W. Bibb No. 1 Lentz, F. Wilkenson Sur. S.D. 1,030 ft.

Harvey & Henderson No. 1 Erhard, 175-ac. tr., Knight & White Surs. Drlg. 3,383 ft.

R. Olsen No. 1 Murchison, A. Litton Sur. S.O. 1,828-1,926 ft.; T.A.

Texas Northern Oil Co. No. 1 Barton, J. Rogers Sur. D.&A. 2,927 ft.

Bee County

Dougherty No. 3 Hicks, Blk. 39, Uranga Gr. Sd. 3,657-70 ft.; D.S.T. rec. 180 ft. oil and mud; W.P. 80 lbs.; rng. Schlumberger.

Bell County

W. H. Vernor No. 1 McQueen, 9 mi. S of Belton. Drlg. sh. 2,107 ft.

Caldwell County

B. C. Armstrong No. 1 Bell, S. Seal Sur. Drld. plugs 2,465 ft.; stdg. with 1,100 ft. fluid in hole; prep. put on pmp.

C. O. Burgin No. 1 Mebane, F. B. Lee Sur. Drlg. 1,693 ft.

Chiquita Oil Co. No. 3 Moses, Hinds Sur. Drlg. 2,207 ft.

Fain Gillock No. 1 Kelly, Berry Sur. Spd.

Lanning & Coffield No. 1 Trammell, 150

ft. N line, 750 ft. E line lse., Guadalupe College Sur. To P.B.; R.U. to pmp.
Carl Riddle No. 1 Moore, Benton Sur. Drlg. 1,321 ft.

Comal County

J. R. Yates No. 2 Heidrich, Heidrich ranch. Drlg. 941 ft.

DeWitt County

Dirks Bros. No. 1 Clark, Santos Sur. Drlg. 4,027 ft.

Dimmitt County

Teas & Maryland Corp. No. 1 McKnight, Blk. 13, sec. 23. Drlg. sh. 2,557 ft.
H. F. Wilcox O. & G. Co. No. 4 Light ranch, Blk. 9, sec. 97. Drlg. sh. 2,897 ft.

Duval County

Cox & Hamon No. 1 Calidornia-Peters, Sur. 32. Sd. 1,882-98 ft. and 1,838-42 ft.; S.O.; set csg. on upper sd.; comp.; 50 B.P.D.; sd. 1,880 ft.
Magnolia Pet. Co. No. 16 Herbst, Sur. 65. Cg. sh. 2,872 ft.
Magnolia Pet. Co. No. 1 Ruiz, Sur. 190. Set surf. csg. 744 ft.; W.O.C.
Navarro Oil Co. No. 1 Bennett. Drlg. 4,-351 ft.
J. J. O'Hern No. 1-F Benavides, Sur. 170. Drlg. 3,462 ft.
Penn-Palangana Oil Co. No. 2 Schallert, Sur. 239. S.D.; T.D. (cor.) 365 ft.
H. J. Porter et al No. 1 Montemayor, Las Anacus Gr. Sd. 5,215-23 ft.; O.O.; D.& A. 5,500 ft.
Slaughter & Hugle No. 1 Hunter Est., 80-ac. tr., sec. 515. Drlg. 2,631 ft.
E. R. Thomas Est. No. 1 Pena, J. A. Garcia Sur. No. 8. D.&A. 4,610 ft.
Tsesmalis & Shipman No. 2 Canales, Lot 75. O.W.W.O.; old T.D. 4,005 ft.; showed gas; will rework.

Edwards County

Dan Auld No. 1 Henderson, sec. 46, Blk. "E." S.D. 10 ft.
Amon G. Carter No. 1 Sweeten, SE¼, Blk. 2, Sur. 49. Drlg. 5,231 ft.

Frio County

Pagenkopf & Jamieson No. 1 Houston Est., 2,254-ac. tr., J. Figuerroa Sur. S.O. 2,610-03 ft.; set csg. to test 7-in. at 2,480 ft.; swbg.; S.O.&G. and wash wtr.; T.D. 2,641 ft.; reported flwg. 25 B.P.H.

Guadalupe County

Carver & Ellison No. 1 Rumpf, Burman Sur. Drlg. 1,216 ft.
Elimag Oil Co. No. 1 Hardiman, Dikes Sur. T.D. 2,201½ ft.; rng. csg.
Mason Altgeit No. 1 Schubert, Esnaurizer Sur. T.D. 1,081 ft.; P.B. 890 ft.; S.D.

Hidalgo County

Atlantic Ref. Co. No. 1 American Rio Grande. Cg. 5,307 ft.
Darby Pet. Co. No. 1-B Holbien, Sh. 3, Blk. 5, sec. 7, San Animas Gr. D.S.T. 1,778-89 ft.; showed 320 lbs. gas in 1¼ min.; tried to blow out; killed and W. O.O.; T.D. 1,789 ft.
Howell et al No. 1 Talbot, 181-ac. tr., Lavaca Gr. M.I.M.
Y. & B. Oil Co. No. 1 Waite, Tr. 382, Los Jidos Gr. Washing down; T.D. 4,050 ft.; prep. to D.D.; S.D.

Jim Wells County

H. M. Hill et al No. 1 Kuether, Lots 70 and 75, sec. 52, Haldeman Subd. R.U.; W.O. gas.
Magnolia Pet. Co. No. 7 Seeligson, 10,438-ac. tr., Los Jaboncillos Gr. Sd. S.G. 6,-488-6,503 ft.; D.S.T. 6,488-6,503 ft.; rec. 60 ft. dist.; 1,000 lbs. W.P. 10-min.; took short core; well blew out and burned; S.I. and killed; cleaned hole; set 7-in. protective csg. 6,794 ft.; W.O.C.

Karnes County

DeGraff & Reele No. 1 Cochran, McConnel Lge. Drlg. 1,487 ft.
Herbert Aid No. 1 Union Life Ins. Co. Sd. 2,131-43 ft.; slight odor gas; tstd. S.W.; cg. sd. 2,163 ft.
Ivan Howard No. 1 Moczygemba, Erasmo Seguin 5, League Gr. Top sd. S.O. 2,-159 ft.; oil sd. 2,174-78 ft.; rmg. to 2,-131 ft.; to test.

Kendall County

Landon & Peffley No. 1 Seidensticker. Sur. 257, Chorcon Gr. S.D. 530 ft.

Lee County

Jas. E. Pederson No. 1 Turner, Davi' Hudson Sur. S.O.&G. 6,140-80 ft.; sdtrkd. at 4,600 ft. and drld. to 6,132 ft.; S.O.&G.; set csg. 6,021 ft.; acdzg. with 20-bbl. load; when opened well flwd. 20-bbl. head and went dead; swbd. oil and wtr.; acd.; to put on pmp.; S.D.

Live Oak County

Chiquita Oil Co. No. 1-A Taylor-Lark, Scrugham Sur. Drlg. 531 ft.
L. Glasscock No. 1 Bonham, Simmons Subd., Blk. 45. Spd.
Chas. Hanna et al No. 1 Wedding, 200-ac tr., Haughy Sur. S.D. 1,900 ft.
Marzo Oil Co. No. 1 Alexander, Ayres Sur. Drlg. 73 ft.
Petroleum Producers Co. No. 1 Alexander, Nichols ranch, Ayers Sur. Drlg. sd. 1,-063 ft.
Ranco Oil Corp. No. 1 fee, 660 ft. NW and SW lines, Pointevent Sur. 3. Drk. stdg.
F. D. Salter No. 3 fee, Osborn Sur. Drlg. 617 ft.
Standard Oil Co. of Texas No. 1 Nicholson, Thompson Sur. Set csg. 442 ft.; stdg.; W.O. wtr. well.
Unit Pet. Co. No. 1 Atkinson, Ayres Sur. S.D. 1,350 ft.

Maverick County

Rio Dev. Co. No. 4 State Bank & Trust Co., Sur. 2. Drlg. sh. 897 ft.
Wellington Oil Co. No. 1 Chittam, 330 ft. N line, 2,310 ft. W line, sec. 129. Blk 7. T.D. 3,287 ft.; flwd. intemittently at rate of 10 B.P.H. and went dead; acidized; swbd. 7 B.P.H. oil; R.U. to pmp.; T.D. 3,287 ft.

McMullen County

Alabama Minerals Corp. No. 1 Gordon. O.W.W.O.; T.D. 2,537 ft.; set csg. 1,960 ft.; drlg. plugs.
Coyle & Bedwell No. 1 Two Rivers Rnch. Co., sec. 60. S.D. 10 ft.
V. G. Schimmel No. 1 Kountz, E.T.&R.R. Sur. Spd.
C. C. Shumway No. 11 Shiner, sec. 6, Shumway Subd. Drlg. 227 ft.
Pat Tinney No. 1 Rutherford, Blk. 17, Two Rivers Ranch Subd. S.D. cor. T.D. 942 ft.; D.&A.

Medina County

R. S. Bolling No. 1 McMenemy, Sur. 33⅓ R.U.
M. L. Walker No. 1 Riff, Hans Sur. No. 43. R.U.

Nueces County

Camp Prod. Co. No. 1-A Wardner, sec. 18, Stratton Subd. D.S.T. 6,476-82 ft.; rec. 40 ft. dist. in 4½ min.; W.P. 400 lbs.; perf. csg. 6,500-05 ft.; T.D. 6,521 ft.; comp.; 90 B.P.D. dist. on ¾-in. ck.; T.P. 2,450 lbs.; C.P. 2,250 lbs.
Mills Bennett Prod. Co. No. 1 Johnson, sec. 125, Pauls Subd. R.U.
Sannix Oil Co. No. 1 Nesloney, 760-ac. tr., Casa Blanca Gr. R.U.
Seaboard Oil Corp. No. 1 John M. Luby, 466 ft. S and W lines, Blk. 1, Sh. 2. Luby Subd. Set 10¾-in. csg. 1,258 ft.; W.O.C.
Southern Minerals Corp. No. 2 King, Blk 6, R. King Farm Lots. D.S.T. 4,020-33 ft.; rec. 640 ft. oil, 850 ft. S.W. in 20 min. at 35 lbs. W.P.; cg. ahead.

San Patricio County

Argo Oil Corp. No. 1 Soehnge, 159.66-ac. tr., Blk. 11, Schleicher & Joseph Subd., Delgado Gr. Drlg. 4,021 ft.
Danray Oil Co. No. 1 Davis, Tr. 5, Wm. Boyd Sur. Set csg. 7,117 ft.; perf. 7,-080-90 ft. and 6,540-44 ft.; rec. S.W.; to P.B. and perf. 5,000 ft.
H. J. Porter No. 1 Schmalsteig, sec. 9, Paul Subd. Set surf. csg. 775 ft.; W. O.C.
F. P. Schwab No. 1 Smith, Lot A-16, Cubage & Miller Subd., O'Connor ranch. D.S.T. 5,425-36 ft.; rec. 160 ft. oil mud and 900 ft. oily S.W. 9 min.; D.&A. 6,505 ft.

Starr County

Calderoni-James-Foliette No. 1 Rodriguez Blk. 6, Sh. 56. Porc. 80. Set 4½-in. csg. 1,483 ft.; T.D. 1,511 ft.; P.B. T.D. 1,756 ft.; S.D.; W.O.O.
G. E. Dodd No. 1 Wood Est. Set 10-in. surf. csg. 80 ft.; W.O.C.
Sun Oil Co. No. 1 Guerra, Jose Antonio Guadardo Sur., Porc. 111. Drlg. 2,-213 ft.
Transwestern Oil Co. and Davenport No. 3 Slick, sec. 527. Drlg. 6,197 ft.

Travis County

W. O. Caffey No. 1 Bremond, 104.5-ac. tr., Santiago del Valle Sur. Drlg. 416 ft.
W. O. Caffey No. 1 Meister, Conrad Sur. Drlg. 58 ft.
Kyle et al No. 1 Hunter, Burleson Sur. D.&A.; T.D. 695 ft.
J. E. Mills No. 1 Washington, Navarro Sur. S.D. 1,150 ft.

Webb County

Adams & LeFevre No. 1 Garcia, Blk. 27. Hughes Subd., Sur. 592. Perf. 1,860-66 ft.; rec. S.W.; P.B. 1,670 ft.; W.O.C.; T.D. 2,500 ft.
French Oil Corp. No. 1 Benavides, Sur. 704. S.D. 1,000 ft.
Randon Oil Co. No. 1 Palmer, Sur. 474. S.D. 1,971 ft.

Willacy County

La Sal Vieja Oil Corp. No. 1 Garcia Ld. & Cattle Co., Tr. 73. M.I.M.
Magnolia Pet. Co. No. 1 Armendiaz, Sh. 4, San Juan de Carricitos Sur. Drlg. sh. 4,467 ft.

Wilson County

Diamond Halff Oil Co. No. 1 Houston, 200-ac. tr., Reynolds Sur. Drlg. 4,061 ft.
Arnold, Dink, Stone & Haley No. 1 Black, 1,102.3-ac. tr., hrs. of Juan and Simon Arocha Sur. Drlg. sh. 217 ft.
Pat Higgins No. 1 Higgins, Rodriguez Sur. 237. Set surf. csg. 30 ft.; W.O.C.

Zapata County

Eugene Mays No. 1 Flores, Blk. 198, Doty Subd., Charco Redondo Gr. D.&A. 2,-515 ft.

S. W. TEXAS PROVEN

McCampbell—Aransas-San Patricio Counties

Atlantic Ref. Co. No. 1-F McCampbell, Blk. 28. Set csg. at T.D. 7,130 ft.; washing in.
Atlantic Ref. Co. No. 8-C McCampbell, Lot 1, Blk. 42. Drlg. 4,590 ft.
Atlantic Ref. Co. No. 4-B Murray, Lot 9, Blk. 12. Sd. 7,092-96 ft.; set csg. 7,096 ft.; W.O.C.
Atlantic Ref. Co. No. 1-B Porterfield, Lot 8, Blk. 10. Dist. sd. 7,010-15 ft.; set csg. 7,121 ft., T.D.; comp.; 90 B.P.D.; 9/64-in. ck.; T.P. 1,950 lbs.; C.P. 2,150 lbs.
Atlantic Ref. Co. No. 2-B Porterfield, Lot 11, Blk. 8. T.D. 7,135 ft.; prep. run S.J.
Atlantic Ref. Co. No. 3-B Porterfield, Lot 8, Blk. 11. Rng. scrn. and lnr.; T.D. 7,135 ft.; completing.
Atlantic Ref. Co. No. 4-B Porterfield, Blk. 10, Lot 10. Drlg. 680 ft.
Atlantic Ref. Co. No. 1-C Porterfield, Lot 8, Blk. 12. Drlg. 8,027 ft.
Buckingham Oil Co. and Tom Graham No. 2-D Porterfield, Lot 11, Blk. 9. Fsg. 6,762 ft.
Buckingham Oil Co. No. 4-B McCampbell, Lot 16, Blk. 40. O.W.W.O.; old T.D. 7,430 ft.; R.U. to D.D.
Buckingham Oil Co. No. 5-A McCampbell, Lot 4, Blk. 39. O. sd. 6,544-48 ft.; reperf. csg. 6,544-47 ft.; clg.
Buckingham Oil Co. No. 12-A McCampbell, Blk. 42. Perf. 7,095-7,119 ft.; S.W. & O.; pigd. to reperf.
Buckingham Oil Co. No. 1-B McCampbell, Lots 13 and 14, Blk. 40. O.W.W.O.; old T.D. 6,557 ft.; sdtrkd. 6,351 ft.; drlg. 6,497 ft.
Buckingham Oil Co. No. 1-C McCampbell, 33.8-ac. tr., Blk. 27. T.D. 7,150 ft.; prep. rework.
Franston Oil Co. No. 1 Murray, Lot 7, Blk. 37. R.U.
Tom Graham No. 1 Edwards, Lot 16, Blk. 7. Drlg. 4,060 ft.
Landreth Prod. Co. No. 6-A McCampbell, Lot 1, Blk. 40. Sd. 7,110-18 ft. and 7,120-26 ft.; set csg.; comp.; no ga.
Landreth Prod. Co. No. 7-A McCampbell, Lot 1, Blk. 39. R.U.
Neill & Peterson No. 2-A McCampbell, Lot 1, Blk. 43. Drlg. 5,477 ft.
Shasta Oil Co. No. 1 Davis, Lot 16, Blk. 9. Drlg. 5,715 ft.
Shasta Oil Co. No. 3 Vaughn, Lot 11, Blk. 10. Set 7-in. csg. 7,129 ft.; comp.; no ga.

Carroll—Bastrop County

Nelson Puett No. 7 Carroll Est., 535.75-ac. tr., A. Mays Sur. T.D. 2,299 ft.; set 5½-in. csg. 2,140 ft.; washing.

Plummer—Bee County

W. C. McBride No. 2-B Plummer, Chessman Sur. Drlg. 1,735 ft.

North Dale—Bastrop County

Marts & Beavens No. 1 Lackey, Gray Sur. Rmg. 2,225 ft.

West Tuleta—Bee County

Salt Dome Oil Co. No. 3 Tuleta Merchantile Co., SW¼, sec. 10, Wragley Subd., Uranga Gr. Jtg.; T.D. 3,079 ft.; flwg. 5 B.P.D. oil and slugs mud; W.O.O.

Gas Ridge—Bexar County

W. H. Kennon No. 1 Oliver. T.D. 3,464 ft.; S.D.

Alta Mesa—Brooks County

Standard Oil Co. of Texas No. 1 Mestina, Lse. No. 1. O.W.W.O.; old T.D. 4,277 ft.; cg. 4,525 ft.
Standard of Texas No. 5 Mestina, Lease No. 1. 7-in. csg. set 3,220 ft.; T.D. 5,505 ft.; perf. 4,513-20 ft.; plugged and re perf. 4,520-24 ft.; plg. tbg. to reperf.
Standard Oil Co. of Tex. No. 9 Mestina Lse. No. 1, La Mestina and Gonzalena Sur. T.D. 2,463 ft.; set 7-in. csg. 2,450 ft.; tstg.

Alta Verde—Brooks County

Bishop & Woods No. 1 Maupin, Sur. 311 P.B. 1,114 ft.; perf. csg. 1,094-1,108 ft.; tstg.
Bishop & Woods No. 1 Powers, 378-ac. tr., Sur. 311. Spd.
Dick Young No. 5 Singer, Blk. 12, Sur. 312 (W.O.). T.D. 1,810 ft.; S.D.

North Alta Mesa—Brooks County

Standard Oil Co. of Tex. No. 2 Mestina, Lse. No. 2. D.&A.; T.D. 2,404½ ft.

Branyon—Caldwell County

B. & T. Pet. Co. No. 1 Magee, J. A. Neill Sur. T.D. 2,236 ft.; comp. on pmp.; 45 B.P.D.
B. & T. Pet. Co. No. 2 Magee, J. A. Neill Sur. T.D. 2,295 ft.; set 5½-in. csg. 2,-003 ft.; W.O.P.
Johnson Drlg. Co. No. 1 Lockhart State Bank, J. Roe Sur. Comp. on pmp.; 84 B.P.D.; T.D. 2,194 ft.
Johnson Drlg. Co. No. 2 Lockhart State Bank, John Roe Sur. Set 7-in. csg. 1,-916 ft.; drlg. 2,127 ft.
Mar-Jon Oil Co. No. 3 Fulps, J. Neill Sur. T.D. 1,800 ft.; S.D.
Martell Pet. Co. No. 2 Clark, J. R. Miller Sur. Drlg. 1,815 ft.
Martell Pet. Co. No. 2 Young, J. R. Miller Sur. Stdg. 2,242 ft.; set 5½-in. csg.
Potter-Snowden No. 3 McCrory, J. Neill Sur. T.D. 2,200 ft.; flwg. 30 B.P.D.; set 7-in. csg. 1,865 ft.
Second National Oil Co. No. 1 White. Swbd. O.&G.; 7-in. csg. 2,080 ft.
Taylor Ref. Co. No. 3-B Branyon, D. Cooper Sur. T.D. 2,325 ft.; comp.; 60 B.P.D. on pmp.
Universal O. & G. Co. No. 2 Calliham, Miller Sur. D.&A. 2,410 ft.
Wm. Vaughy No. 7 Flowers, J. A. Neill Sur. T.D. 1,897 ft.; set 7-in. csg. 1,895 ft.; comp.; 90 B.P.D. on pmp.; T.D. 2,-034 ft.

Buchanan—Caldwell County

Edwill Oil Co. No. 4 Browne, Chas. M. Cannon Sur. R.U.
McAlester Fuel Oil Co. No. 2 Miears, Chas. M. Cannon Sur. Set csg. 1,942 ft.; pmpg. acid and wtr.
McAlester Fuel Oil Co. No. 3 Miears, Cannon Sur. Set surf. csg. 20 ft.; drlg. Buda 2,326 ft.
Ralph Ogden No. 1 Dinges, Damon Sur. Set 7-in. csg. 1,861 ft.; T.D. 2,205 ft.; rng. tbg.
Lewis-Patton Co. No. 1 Brown, Cannon Sur. Drlg. 1,915 ft.
Potter-Snowden No. 5 Medlin, Cannon Sur. Drlg. 1,927 ft.

Dunlap—Caldwell County

Ralph E. Fair No. 1 Dunlap, Seal Sur. Comp.; 120 B.P.D.; T.D. 2,364 ft.
Chas. Schreiner No. 1 Moody, Seal Sur. S.D.; T.D. 2,313 ft.

Joliet—Caldwell County

Frank Williams No. 1 Smith, Berry Sur. D.&A. 2,517 ft.

Larremore—Caldwell County

Spokane O. & G. Co. and Okla. O. & G. Co. No. 3 Starkey, C. Crenshaw Sur. S.D. 890 ft.

Salt Flat—Caldwell County

Louis Crouch No. 1 Davis, Hinds Sur. R.U.
E. J. Koeugh No. 1 Tiller, Hinds Sur. R.U.
Pummel & Brady No. 1 Jackson, S. Morris Sur. S.D. 1,500 ft.
Elimag Oil Co. No. 1 Pope, J. P. Rains Sur. W.O. rig.
Hantho-Nelson, Inc., No. 1 New, James Hinds Sur. Drlg. 2,391 ft.

Benavides—Duval County

Argo Oil Co. No. 8 Carillo, sec. 9, Sweden Farm Lots. Comp.; 116 B.P.D. on ¼-in. ck.; sd. 4,753-64 ft.
Arkansas Fuel Oil Co. No. 6 Rossi, Santos Flores Sur. Comp.; 336 B.P.D. on ¼-in. ck.; oil sd. 4,763-75 ft.
Arkansas Fuel Oil Co. No. 7 Rossi, Santos Flores Gr. Cg. 3,896 ft.
Benedum & Trees Oil Co. No. 7 Puig, San Andres Gr. Sd. 4,803-10 ft.; set csg.; drlg. plugs.
Benedum & Trees Oil Co. No. 8 Puig, 750-ac. tr., San Andres Gr. Drlg. 3,-729 ft.
Blanchard No. 1 Puig, Blk. 59, Sur. 238. O.W.W.O.; T.D. 5,425 ft.; well went dead; bldg. drk. to rework.
Bridwell Oil Co. No. 4 Anciro, Flores Gr. No. 25. Rng. csg. 4,753 ft.; sd. 4,-727-53 ft.; W.O.C.
Bridwell Oil Co. No. 3 Anciro, 152-ac. tr., Lot 19, Sweden Farm Lots. Set 7-in. csg. 4,768 ft.; comp.; 200 B.P.D. on ¼-in. ck.
L. Glasscock No. 1 Flores, sec. 9, Sweden Farm Lots. T.D., lig. 4,805 ft.; S.D. to put on pmp.
Frank Gravis Oil Co. No. 4-A Puig, 100-ac. tr., San Andres Gr. T.D. 4,822 ft.; comp.; 106 P.B.D. on ¼-in. ck.; T.D. 4,822 ft.
Frank Gravis Oil Co. No. 5-A Puig, 100-ac. tr., San Andres Gr. Drlg. 2,327 ft.
Gravis & Doran No. 6 Puig, San Andres Gr. No. 24. Sd. 4,828-33 ft.; set 7-in. csg. 4,819 ft.; W.O.C.
Hiawatha O. & G. Co. No. 4 Southland Life, sec. 12, Flores Gr. No. 25. Set csg. 955 ft.; W.O.C.
Navarro Oil Co. No. 1-A Owens, 100-ac. tr., Blk. 19. Sd. 4,715-16 ft.; set 7-in. csg. 4,708 ft.; comp.; 207 B.P.D. on ¼-in. ck.
Navarro Oil Co. No. 3 Owens, 100-ac. tr., Blk. 19. Drlg. 4,067 ft.
Nordan & Morris No. 2 West, sec. 10, Sweden Farm Lots. R.U.
Reynosa Oil Co. No. 4 Wilson, 80-ac. tr., sec. 9, Sweden Farm Lots. Oil sd. 4,758-77 ft.; comp.; 144 B.P.D. on ¼-in. ck.
Reynosa Oil Co. No. 5 Wilson, 80-ac. tr., sec. 9, Sweden Farm Lots. Oil sd. 4,765-78 ft.; comp.; 156 B.P.D. on ¼-in. ck.; set 7-in. csg. 4,765 ft.
Reynosa Oil Co. No. 6 Wilson, 80-ac. tr., sec. 9. Drlg. 2,796 ft.
Russ Pet. Co. No. 7 Farias, Flores Gr No. 25. Oil sd. 4,780-98 ft.; comp.; 258 B.P.D. on ¼-in. ck.
Russ Pet. Co. No. 8 Farias, Santos Flores Gr. No. 25. Set csg. 4,848 ft.; T.D. 4,816 ft.; oil sd.; W.O.C.
Russ Pet. Co. No. 1 Rossi, sec. 10, Sweden Farm Lots. Oil sd. 5,348-50 ft.; comp.; 112 B.P.D. on 15/64-in. ck.
Standard Oil Co. of Kans. No. 5 Parr, 80-ac. tr., San Andres Gr. R.U. and S.D.
Standard Oil Co. of Kans. No. 10 Rossi, Santos Flores Gr. Drlg. 2,537 ft.
Sun Oil Co. No. 1 Barton Est., 1,056.1-ac. tr., Surs. 425, 6 and 24, San Andres Gr. T.D. 5,045 ft.; S.D.

Colmena—Duval County

Conservative Oil Co. No. 2 D.C.R.C., Sur. 47. D.&A. 1,507 ft.
Conservative Oil Co. No. 3 D.C.R.C., Sur. 47. R.U.

Driscoll—Duval County

Continental Oil Co. No. 19 Sevier, Sur. 448. Drlg. 587 ft.

Government Wells—Duval County

Hoffman—Duval County

Cox & Hamon No. 22 Green, Sur. 118. Comp.; 80 B.P.D. on ½-in. ck.; sd. 2,-700-05 ft.
Cox & Hamon No. 10 Robles, sec. 68. Sd. 2,691-99 ft.; set csg. 2,691 ft.; T.D. 2,699 ft.; tstg.
Gulf Stream Oil Co. No. 5-B Hoffman, Sur. 118. Drlg. 1,917 ft.

Kohler—Duval County

Bunn Bros. & Coates No. 2-A Peters, Gibson Sur. 397. Sd. 1,835-45 ft.; set csg.; W.O.C.

Labbe—Duval County

Magnolia Pet. Co. No. 10 Labbe, Sur. 1. R.U.

Lundell—Duval County

Govt. Wells Oil Co. No. 8 Lundell, Sur. 140. Drlg. 1,215 ft.

Piedra Lumbre—Duval County

Magnolia Pet. Co. No. 8 D.C.R.C., Sur. 203. R.U.

Magnolia Pet. Co. No. 22 D.C.R.C., Sur. 100. Swbg. 1,990 ft.

Sarnosa—Duval County

Sarnosa Oil Corp. No. 18 Weil, Sur. 130. Sd. 2,394-2,416 ft.; comp.; 121 B.P.D.

Seven Sisters—Duval County

Pan American Prod. Co. No. 8-A Welder, Sur. 381. Drlg. 257 ft.
S. and D. Daube No. 41 Campos, Sur. 224. Sd. 2,694-2,701 ft. and 2,729-30 ft.; odor oil; tstg.
Sun Oil Co. No. 3 Rodriguez, Sur. 222. T.D. 2,828 ft.; swbg.; R.U. to pmp.

Sweden—Duval County

Hiawatha O. & G. Co. No. 3 Miller, sec. 24, Flores Gr. No. 25. M.I.M.

Thomas-Lockhart—Duval County

Lockhart Bros. No. 3 Parr, Sur. 277. T.D. 4,698 ft.; swbg.
Taylor Pet. Co. No. 1 Parr, 40-ac. tr., Sur. 279. Cg. 3,911 ft.

Pearsall—Frio County

Amerada Pet. Corp. No. 8 Haiff & Oppenheimer, S. A. Ditch Sur. 1,104 (W.O.) Set 7-in. protective csg. 10,341 ft.; stdg. 10,745½ ft.

Darst Creek Extn.—Guadalupe County

Kenedy & Crowley No. 1 Anderson, J. R. Robinson Sur. S.D. 2,619 ft.
Riddle Oil Co. No. 2 Williams, DeWitt Sur. No. 13. Set csg. 2,378 ft.; S.D.
Trio Oil Co. No. 2 Willie, Darst Sur. Drlg. sh. 1,557 ft.

Luling—Guadalupe-Caldwell Counties

Magnolia Pet. Co. No. 9 Branyon, Reaville Sur. Set csg. 2,155 ft.; W.O.C.
Millican & Norman No 2 Lampkin, J. Henry Sur. Set csg. 1,715 ft.; treating; T.D. 2,116 ft.
Muckelroy & Schame No. 1 King, N. Reaville Sur. M.I.M.
Potter P. L. Co. No. 1 Cartwright, J. Henry Sur. T.D. 1,991 ft.; T.C. 1,781 ft.; 5½-in. csg. 1,770 ft.; clg. hole.
Spokane O. & G. Co. No. 1 Hibbits, J. Henry Sur. Drlg. sh. 521 ft.
Rio Bravo Oil Co. No. 17-L Merriweather, John Henry Sur. Spd.
Taylor Ref. Co. No. 2 Harris, H. Cottle Sur. Crevice 2,002-06 ft.; stdy. 2,006 ft.

Staples—Guadalupe County

W. W. Lincoln No. 2 Gabriel, Geo. Allen Sur. T.C. 695 ft.; T.D. 710 ft.; 7-in. csg. 695 ft.; R.U. to pmp.

Zoboroski—Guadalupe County

Forest Dev. Co. No. 2 Hoffman, G. DeWitt Sur. Set csg. 2,197 ft.; T.D. 2,214 ft.; stdg.
Forest Dev. Corp. No. 6 Hoffman, DeWitt Sur. Set csg. 2,284 ft.; T.D. 2,288 ft.; stdg.
Skivereen Oil Co. No. 1 State of Texas, Guad. River bed, 50 ft. S of No. 1. Tstg.; T.D. 2,240 ft.; pmpd. dry; S.D.

LaBlanca—Hidalgo County

Dee Davenport No. 1 Hidalgo Wtr. & Imp. Dist., Lot 16, Engleman Subd., Smith Sur. 262. Cg. 6,747 ft.
Dee Davenport No. 2 Swallow, Clyde Fennis Ld. Co. Sur. Set 7-in. csg. 7,939 ft.; W.O.C.
Gulf States Oil Co. No. 2-A Delta Orchards, Lot 3, Sur. 94. Drlg. 2,225 ft.

Alworth—Jim Hogg County

French Oil Corp. No. 6 Garcia, Sur. 269. T.D. 1,063 ft.; flwg. 1 B.P.D.; sds. 1,-034-36 ft. and 1,038-49 ft.; tstg.
Joe Walsh No. 3 Wade, Lot 2, Blk. "C," Bode Subd. D.&A.; T.D. 300 ft.

West Fremont—Jim Wells County

Homer Presnall No. 1 Holmes. Lots 59 and 70, sec. 76. T.D. 2,259 ft.; D.S.T. rec. 50 ft. oil 4½ min.; set csg. 2,257 ft.; W.O.C.

North Pettus—Karnes County

Magnolia Pet. Co. No. 19 Porter, B.&B. Sur. R.U.

South Burnell—Karnes County

Luling O. & G. Co. No. 5 Boyce, Samson Still Sur. No. 8. Set 5½-in. csg. 3,605 ft.; T.D. 3,624 ft.; comp.; 572 B.P.D. on ¼-in. ck.
Luling O. & G. Co. No. 6 Boyce, Still Sur. No. 8. R.U.
Pettus Oil Ref. Co. No. 4-A McKinney, Ballard Sur. Set csg. 3,622 ft.; T.D. 3,654 ft.; comp.; 92 B.P.D.; jtg.

Ezsell—McMullen County

R. P. Holland No. 2 Matkin, Gloreck Sur., Lot 2433, Simmons Sur. Sd. 1,478-86 ft.; set csg.; W.O.C.
E. M. Jones No. 21 Ezzell, sec. 23. Drlg. 1,215 ft.
E. M. Jones No. 2-B Ezzell, NE¼, SE¼, sec. 20. Sd. 1,505-11 ft.; set 7-in. csg. 1,541 ft.; W.O.P.
E. M. Jones No. 3-B Ezzell, sec. 20. Drlg. 97 ft.
E. M. Jones No. 4-B Ezzell, sec. 20. Sd. 1,515-16 ft.; perf. 1,514-25 ft.; R.U. to pmp.

South Cailliham—McMullen County

Bill Howard No. 9 Claunch, Hely Sur Drlg. 1,157 ft.

Loma Alta—McMullen County

J. T. Lanier No. 1 Hagist, SE¼, N½, Sur 481. S.D. 2,513 ft.

Aqua Dulce—Nueces County

Heep Oil Corp. No. 1 Purl, 440-ac. tr., Subd. No. 2. Sd. 5,724-29 ft.; drlg. ahead 6,337 ft.
Texon Drlg. Co. No. 2 Elliff, 3.054-ac. tr. Longorio Sur. T.D. 6,668 ft.; sd. 6,637-68 ft.; reperf. 6,663-68 ft.; tstd. gasoline; to drill deeper.
Union Prod. Co. No. 1 Simmons, 1,000-ac. tr., Lopez de Juan Sur. Drk.
Union Prod. Co. No. 1 Schroeder, sec. 87, Paul Subd., Driscoll ranch. Drlg. sdy. sh. 7,971 ft.

Clara Driscoll—Nueces County

O. W. Killam No. 3 Ellick, 86-ac. tr., Sur. 109. Set 7-in. csg. 3,934 ft.; perf. 3,905 10 ft.; recmtd.; reperf. 3,908-12 ft.; comp.; 90 B.P.D. on ¼-in. ck., 50% S.W.; P.D. depth 3,934 ft.
O. W. Killam No. 4 Ellick, sec. 109. Drlg. 2,218 ft.

S. Clara Driscoll—Nueces County

Mid-Continent Pet. Corp. No. 4 Sevier, R. Russell Sur. Skdg. on.
Sun Oil Co. No. 1 Flynn, sec. 110, Paul Subd., Driscoll ranch. D.S.T. 3,928-38 ft.; rec. 2,140 ft. fluid incl. 450 ft. P. L.O. and 1,540 ft. oily mud and 120 ft. S.W.; sd. 3,930½-38½ ft.

Flour Bluff—Nueces County

Humble O. & R. Co. et al No. 2 Collier. Drlg. 1,057 ft.
Humble O. & R. Co. et al No. 4 Cordz, Blk. 45. Set csg. 6,663 ft.; W.O.C.
Humble O. & R. Co. et al No. 1 Downey. T.D. 6,666 ft.; comp.; no ga.
Humble O. & R. Co. et al No. 6 Gulden, Blk. 47. Drlg. sh. 4,715 ft.
Humble O. & R. Co. et al No. 5 Roberdeau, Lot 4, Blk. 49. T.D. 6,663 ft.; comp.; no ga.
Humble O. & R. Co. et al No. 8 Webb, Lot 9, Blk. 56. Drlg. sh. 2,250 ft.

London—Nueces County

Wellington Oil Co. and Seaboard Oil Corp. No. 1-B Lehman, NW¼, SE¼, sec. 25. T.D. 5,000 ft.; S.D.; M.I. heavy rig.

Luby—Nueces County

Seaboard Oil Corp. No. 3 Luby, Blk. 3, Sh. 2. Sd. 5,040-57 ft.; set 7-in. csg. 5,-057 ft.; oil sd. 5,048-56½ ft.; perf. 5,-053-56½ ft.; comp.; no ga.
Seaboard Oil Corp. No. 4 Luby, Blk. 4, Sh. 2, Luby Subd. R.U.
Stanolind O. & G. Co. No. 3 McCann, 500-ac. tr. R.U.

Saxet Heights—Nueces County

Wm. Brady No. 2 Whalen, Villareal Sur Oil sd. 4,043-56 ft.; set 5½-in. csg. 4,-065 ft.; clg. plts.

Saxet—Nueces County

Bryant & Howell No. 4 Plachy, Sur. 25 Sd. 4,161-75 ft.; set 5½-in. csg. 4,250 ft.; W.O.C.
Donico Prod. Co. No. 6 Donigan, 80-ac. tr. Drlg. 4,677 ft.
J. E. Freeman No. 1 Scott, Sur. 500. No report.
Greta Oil Corp. No. 2 Bliss, 25-ac. tr., Sur. 406. Fsg.; blew out; rng. wild through 10-in. surf. csg. set at 1,520 ft.; T.D. 6,956 ft.; D.&A.
Greta Oil Co. No. 5 Humphries, Stevens Sur. T.D. 6,790 ft.; set csg. 4,132 ft.; plugged perf. 4,055-75 ft.; reperf. 4,-070-75 ft.; plugged to perf. lower.
Greta Oil Corp. No. 1 Isensee, Sur. 404. Tried to blow out; recmtd. surf. csg.
Greta Oil Corp. and Morgan No. 8 Morgan-Clark, Sur. 405. Set csg. 1,100 ft.; W.O.C.
Houston Oil Co. No. 5-A Harrell, Sheppard Farm Lots. T.D. 4,886 ft.; cg. 6,017 ft.
Houston Oil Co. No. 9-A Harrell, Lot 24, Sheppard Farm Lots. Drlg. sh. 1,220 ft.
Houston Oil Co. No. 4 Hunter, 75-ac. tr., sec. 8, Rge. 5. Drlg. sh. 4,823 ft.
Houston Oil Co. No. 28 Morgan, 493.63-ac. tr., sec. 7, Rge. 6. Set csg. 4,550 ft.; W.O.C.
H. H. Howell No. 6 Hutchins, 80-ac. tr., Sur. 416. Set csg. 6,975 ft.; perf. 6,900-18 ft.; S.D.
H. H. Howell No. 8 Hutchins, 80-ac. tr., Sur. 416. Cg. 6,911 ft.
J. K. Kepley No. 1 Donigan, sec. 7, Rge. 6. Drlg. 2,768 ft.
Maryland Corp. and Renwar Oil Corp No. 2 Stillwell-Sagarino, Sur. 500. Oil sd. 6,726-37 ft.; hd. sh.; S.O.&G. 6,740-49 ft.; T.D. 6,749 ft.
Maryland Corp. and Renwar Oil Co. No. 2-B Morgan, Sur. 415. T.D. 6,238 ft.; sd. 6,111-20 ft.; cutting stuck D.S.
Morgan & Chapman Minerals Corp. No. 9 Morgan-Clark, NE¼, Sur. 405. T.D. 6,-945 ft.; sdtrkd. 4.622 ft.; set csg. 6.816 ft.; comp.; 8 B.P.H.; sd. 6,770-78 ft.
North Star Oil Co. No. 12-E Morgan, sec. 405. Drlg. 4,969 ft.
Pan American Prod. Co. No. 2-B Sagarin, Sur. 500. O.W.W.O.; old T.D. 5,827 ft.; R.U. to W.O.
Pan American Prod. Co. No. 5 Solar Sevier, Sur. 311. Drlg. 4,846 ft.
Phillips Pet. Co. No. 7 Morgan, S½, sec. 405. Oil sd. 6,895-6,910 ft.; set csg.; W. O.C.
Republic Nat. Gas Co. No. 21 Dunn, Blk. 37, Sheppard Farm Lots. Set 7-in. csg 6,960 ft.; perf. 6,615-25 ft.; comp.; 124.8 B.P.D. on 5/32-in. ck.
Richardson Pet. Co. No. 3 Harrell, Blk. 33, Sheppard Farm Lots. Drlg. 6,652 ft.
Richardson Pet. Co. No. 7 Hoelscher, Blk. 22, Russell Farm Lots. Comp.; 292 bbls. on ¼-in. ck.; sd. 4,070-78 ft.
Richardson Pet. Co. No. 7 Perkins-Lagasse, Blk. 25, Sheppard Farm Lots. Drlg. 4,107 ft.
Richardson Pet. Co. No. 13 Quiros, Sur. 311. Cg. 6,447 ft.
Richardson Pet. Co. No. 11 Sedwick, 184-ac. tr., Dunn Sur. 312. Drlg. 6,467 ft.
Southern Minerals Corp. No. 9 Ocker, 205-ac. tr. Set 7-in. csg. 4,863 ft.; sd. 4,862-71 ft.; fsg.
Texon Drlg. Co. No. 5 Vance, Gallagher Sur. O.W.W.O.; old T.D. 6,924 ft.; prep. to deepen.

Stratton—Nueces County

Camp. Prod. Co. No. 2 Wardner, sec. 13. M.I.M.

Sullivan—Nueces County

Lockhart et al No. 1 O. Purl, Lot 2, sec 7, Ross Peters Subd. No. 2. Sd. 7,032-52 ft.; P.B. and sdtrkd.; T.D. 7,404 ft.; to P.B.

Midway—San Patricio County

Phillips Pet. Co. No. 4 Ivey, sec. "K," Pauls Subd. Cg. 5,328 ft.
Sun Oil Co. No. 2 Coggin, sec. 82. Oil sd. 5,333-35 ft.; set csg.; W.O.C.; T.D. 5,-338 ft.

Plymouth—San Patricio County

Heep Oil Corp. No. 8-F Welder, sec. 46. Drlg. 7,301 ft.
Humble O. & R. Co. No. 3 Godwin, Lot 1, sec. 23. Drlg. sh. 653 ft.
Plymouth Oil Co. No. 83-C Welder, sec. 70. Oil sd. 5,480-92 ft.; comp.; no ga.
Plymouth Oil Co. No. 84-C Welder, sec. 70. Loc.
Plymouth Oil Co. No. 85-C Welder, sec. 70. Drlg. 956 ft.
Sun Oil Co. No. 3 Roundtree, sec. 34, Lot 4. Perf. 5,636-37 ft.; pmpd. 30 bbls. oil, 50 bbls. S.W.; sanded up; reworking.

Tait Field—San Patricio County

Greta Oil Corp. No. 1 Pullin, Blk. 1, Lot 4. Drlg. 4,527 ft.
Humble O. & R. Co. No. 30 Mayo, Ottman Sur. Comp.; no ga.

Barbacoas—Starr County

K. E. Merren No. 1-A S.C.C.C., Blk. 34, Lambeth Subd., Porc. 89. Set csg. at T.D. 5,640 ft.; sd. 5,470-91 ft.; C.O.; perf. 5,390-5,417 ft. and 5,417-24 ft.; flwg. dist. and S.W.; C.I.C.P. 1,800 lbs. stdg.

Ricaby—Starr County

Conan Wood No. 1 Wardner Est., Porc. 84. Drlg. sh. 1,193 ft.
Dean Bros. No. 1 Valadez, Porc. 84. Sd. 1,863-72 ft.; set 5½-in. csg. 1,872 ft.; T.D. 1,873 ft.; perf. 1,868-72 ft.; 1,200 ft. fluid mostly oil in hole; to put on pmp.
Dodd, Tr., No. 5 Wood Est., Porc. 84. Set csg. 1,772 ft.; T.A.; tstd. S.W.
J. W. Edwards No. 1 Vela, Porc. 84. T.D. 1,955 ft.; T.A.
McAlester & Espenlaub No. 1 Wood, Porc. 84. Drlg. 1,107 ft.
Sun Oil Co. No. 5 Wardner, Vela Sur., Porc. 84. Set surf. csg.; W.O.C.

Rio Grande City—Starr County

Roy Gaines No. 1 Goodrich & Wood, Porc. 81, Tr. 5, Blk. 8. D.&A. 1,618 ft.

Carolina-Texas—Webb County

O. W. Killam No. 58 Bruni, sec. 8, Blk. 12. Drlg. sh. 278 ft.
E. J. Purl et al No. 2 Garza, Sur. 48. Sd. 2,100-07 ft.; S.O.; drlg. bridge 2,-117 ft.

Cole—Webb County

French Oil Corp. No. 2 Perez, Sur. 1007. Comp.; 75 B.P.D.; T.D. 1,986 ft.; sd. 1,978-86 ft.
French Oil Corp. No. 3 Perez, Sur. 1007. R.U.
O. W. Killam No. 57 Benavides, Blk. 17, sec. 8. T.D. 2,593 ft.; S.W.; P.B. 2,437 ft.; sd. odor oil 2,437 ft.; perf. 2,299-2,311 ft.; tstd. some gas; reperf. 2,287-91 ft.; tstd. small amt. gas; reperf. 2,-312-18 ft.; comp.; 6,000,000 ft. gas on ½-in. ck.
Magnolia Pet. Co. No. 3 Valdez, Valdez Sur., Blk. 8. T.D. 3,808 ft.; rng. S.J.

Killam—Webb County

O. W. Killam No. 1 Garcia-Villareal, E½, SE¼, Sur. 337. Cg. 1,979 ft.
O. W. Killam No. 3 Garcia-Villareal, Sur. 1009. Drlg. 467 ft.
O. W. Killam No. 4 Garcia, Sur. 786. Drlg. 779 ft.
O. W. Killam No. 5 Garcia, Sur. 788. Comp.; 125 B.P.D.; sd. 1,998-2,006 ft.; pmpg.
O. W. Killam No. 22 Garcia, Sur. 786. Drlg. 1,119 ft.
O. W. Killam No. 23 Garcia, Sur. 786. Oil sd. 1,980-84 ft. and 1,985-98 ft.; set 7-in. 1,980 ft.; T.D. 1,988 ft.; comp.; 20 B.P.D.
Rowan & Hope No. 3 Laurel Bros., Sur. 1006. T.D. 1,943 ft.; 7-in. csg. 1,934 ft.; W.O. pmp.

Lopez—Webb-Duval Counties

C. H. Andrus No. 1 Billings, Sur. 10. Set 5½-in. csg. 2,262 ft.; W.O.C.

O'Hern—Webb County

J. Gier and Kone Prod. Co. No. 2 Peters, SW¼, Sur. 38. R.U.

Olton—Webb County

Bridwell Oil Co. No. 5 Martin, Sur. 2167. Comp.; 115 B.P.D.; sd. 1,921-28 ft.; jtg.
Gypsy Oil Co. No. 12 Martin, Sur. 458. Comp.; 158 B.P.D. on ½-in. ck.; sd. 1,-878-98 ft.
Gypsy Oil Co. No. 13 Martin, NE¼, Sur. 458. Drlg. 1,117 ft.
Hamil & Smith No. 13 Martin, Sur. 337. Drlg. 1,895 ft.
Mills Bennett Prod. Co. No. 1 Martin, sec. 458. Set csg. 1,976 ft.; S.D.; W.O.
Morgan & Kirkwood No. 1 Juarez, Blk. 23, Sur. 1005. Sd. 1,935-42 ft.; set 7-in. csg. 1,935 ft.; comp.; 160 B.P.D. on pmp.; T.D. 1,942 ft.
Morgan & Kirkwood No. 2 Juarez, Blk. 23, Sur. 1105. R.U.
Morgan & Kirkwood No. 10 Juarez, Blk. 23, Sur. 1108. Drlg. 756 ft.
Porter & Blanchard No. 2 Laurel Bros., Sur. 1006. Cg. 1,945 ft.
Rowan & Hope No. 3 Laurel, Sur. 1106. Comp.; 192 B.P.D.; sd. 1,934-42 ft.
Rowan & Hope No. 4 Laurel, Sur. 1106. Drlg. 1,056 ft.
Superior Oil Co. No. 1 Laurel, Sur. 719. Drlg. 516 ft.

Byersville—Williamson County

Thos. Davis No. 1 Coleman & Davis, Boggus Sur. D.&A.; T.D. 1,290 ft.

LaSal Vieja—Willacy County

Shell Pet. Corp. No. 2 Yturria, Sh. 64, Carricitos Gr. Cg. sh. 6,617 ft.

Escobas—Zapata County

Dulup Oil Co. No. 28 Trevino, 326-ac. tr., Sh. 25. Cg. 1,234 ft.
B. W. Roscoe No. 17 Bustimante, Sh. 33, Fansler Part. D.&A.; T.D. 1,417½ ft.
Texas Co. No. 108 Jennings, Cerrito Blanco Gr. Set csg. 1,250 ft.; W.O.C.

NORTH TEXAS WILDCATS

Archer County

Burk Roy Co. No. 1 J. B. Miller, sec. 20, A.T.N.C.L. Sur. Drlg. 3,630 ft.
Hamon, Hanlon-Buchanan, Inc., et al No. 1 W. P. Ferguson, sec. 2, H.&G.N. Sur. 6⅝-in. 3,900 ft.; S.L. 3,967-90 ft.; shot 120 qts., C.O. bridge.

Baylor County

Hampton et al No. 1 A. G. Cochrell, sec. 2,404, T.E.&L. Sur. S.D.O. 1,385 ft.

Clay County

W. Gant No. 5 C. M. Woraham, D.L.&C.A. Sur. 1,073. Set 6⅝-in. 3,900 ft.; W.O.C.
Healdton O. & G. Co. No. 1 Wallace, Belcher Subd. Mov. in rotary; spudded with spudder.

Cooke County

W. O. Russell No. 1 J. W. Sherrill, Wm. Phelps Sur. A-821. Drlg. 1,420 ft.

Denton County

W. C. Curry et al No. 1 G. F. Owens, N. Rudder Sur. A-1060. S.D.O. 620 ft.
Bruce Lee No. 1 Boyles, S. Ross Sur. A-112. Drlg. 1,580 ft.
Miller Bros. No. 1 D. H. Luster, F. Trevino Sur. A-121. S.D.O. 2,510 ft.
Scroggins et al No. 1 S. M. Freeman, Bradshaw Sur. A-104. S.D.O. 1,900 ft.

Foard County

O. P. Burnham No. 1 Ward, sec. 21, H.& T.C. Sur., Blk. 8. C.O. 2,275 ft.

Grayson County

Denver P. & R. No. 1 Cannon, A. Berry Sur. A-130. Drlg. 4,010 ft.

Montague County

J. W. Sorrell et al No. 1 J. E. Walthall, S. H. Smith Sur. A-662. S.D. 2,000 ft.
Ventex Investments, Ltd., No. 1 S. E. Bell, sec. 11, M.E.P.&P. Sur. Drlg. 3,880 ft.

Wichita County

Hammon Hanlon Buchanan, Inc., No. 1 A. F. Fassett, sec. 1, E.T.R.R. Sur. Drlg. 2,210 ft.
Jack E. Kadane No. 1 C. A. Mangold, P. Castleman 35-A. Drlg. 1,400 ft.
LeBus No. 1 J. F. Miller, W. R. Eaves Sur. A-447.Set 6⅝-in. 3,610 ft.; drlg. 3,700 ft.
W. B. Omohundro No. 1 First Natl. Co., sec. 28, W.V.F.L. Sur. 6⅝-in. 3,687 ft.; W.O.C.
Patterson et al No. 1 B. C. Ellis, J. Waldschmidt Sur. A-792. S.D.O. 930 ft.
Felix Payne No. 1 P. R. Pace, R. J. Scott Sur. A-253. Spud. & S.D.
E. J. Stump No. 1 M. P. Bishon, L. Netherley Sur. A-240. Set surface pipe; S.D.O.
E. J. Stump et al No. 1 J. and J. Waggoner, W. R. Eaves Sur. A-753. 7-in. cmtd. 3,806 ft.; R.U.S.T. to drill plug.
Clyde Texan Oil Fields Co. No. 1 A. W. Burnside, John M. Sharp Sur. A-262. Drlg. 3,804 ft.

Wilbarger County

Barry & Hayes No. 1 McGill, sec. 3, Blk. 9, H.&T.C. Sur. Drlg. 2,885 ft.
King Oil Co. No. 1 R. L. Castleberry, sec. 68, H.&T.C. Sur., Blk. 14. Drlg. 2,035 ft.
W. Little No. 1 A. P. Morris, sec. 3, H.T. &C. Sur., Blk. 14. Drlg. 700 ft.

Wise County

W. D. Dilbeck No. 1 J. I. Wilkins, E. Stephens Sur. S.D. 600 ft.
Latex Oil Co. No. 1 C. R. Smith, J. Couch Sur. A-104. Showing gas 3,843-45 ft.; 6⅝-in. 3,943 ft.; S.S.O.&G. 3,952-95 ft.; shot 60 qts.; C.O. bridge.

Young County

F. W. Bennett No. 2 R. V. Tidwell, J. L. Blackwood Sur. A-1378. B.O.S. 3,248-3,360 ft.; T.D. 3,698 ft.; C.O. after shot.
T. D. Humphrey No. 1 S. R. Ragland. T.D. Kuykendall Sur. Sd.&L. 3,773-97 ft.; C.O.
L. A. Long No. 1 F. A. Burnett, E.G. Rector Sur. No. A-239. 6⅝-in. 3,815 ft.; W.O.C.
Lupton & Long No. 1 W. I. Gilmore, J. Gilmore Sur. A-2135. H.F.W. 4,105 ft.; S.D.O.
W-K Royalty Co. No. 1 J. A. Wright, J. N. Taylor Sur. A-1243. S.D.O. 2,900 ft.

E. C. TEXAS WILDCATS

Anderson County

Humble O. & R. Co. No. 5-A Southern Pine Lbr. Co. Top Woodbine 4,284 ft.; Georgetown 5,040 ft.; to set csg.

Angelina County

John Coates No. 1 J. L. Russell. Jose Morino Sur., E of Diboll. Drk.

Cherokee County

Merica Oil Co. No. 1 Cherokee Dev. Co., A. J. Acker Sur., 2 mi. E of Maydelle. Drk.

E. H. Moore, Inc., No. 1 Chronister Lbr. Co., 3 miles NE of wells. Tr. 71, Blk. 33, John Durst Gr. Drlg. 1,054 ft.

Falls County

McCleod et al No. 1 F. Bolton, J. R. Cockrill Sur., 4 mi. NW Rosebud. Drlg. 1,029 ft.

Freestone County

J. K. Hughes No. 1 Foster C. E. Gray Sur., 5 mi. SE of Kirvin. W.O.C. 44 ft.

C. E. Rossiter No. 1 J. P. Fulton in J. P. Fulton Sur., 2½ mi. E of Donie. S.D. 956 ft.

Gregg County

Humble O. & R. Co. & Gulf O. Corp. No. 1 E. Robertson, M. Mann Sur., 2½ mi. SW of Longview Trinity test. El. 272 ft. Drlg. 5,477 ft.

Henderson County

American Liberty Oil Co. et al No. 1 LaRue & Johnson, Blk. 11, P. Jackson Sur., 2 mi. W of LaRue. El. 464 ft.; top Georgetown 5,540 ft.; drlg. 6,963 ft.

S. Hunt et al No. 1 Dillard, H. Jeffries Sur., 16 mi. N of Trinidad. El. 361 ft.; top Georgetown 4,080 ft.; drlg. 4,100 ft.

Wm. McDougall No. 1 Trinity, F. & S. Land Co., Blk. 1, H.&T.C. Sur. Drk.

Tide Water Assoc. et al No. 2-C McElreath & Suggett, W. P. Wyche Sur. Top Glen Rose 6,282 ft.; S.D. to test 9,320 ft.

Hopkins County

V. A. Hughes No. 1 B. and T. Hardaway, Wm. A. Irwin Sur., 3 mi. E of Ridgeway. Drlg. 3,910 ft.; El. 579 ft.

Houston County

American Liberty No. 2 J. A. Bean, W. Burke Sur., 1 mi. N of Grapeland. approx. 2,200 ft. E of No. 1. Top sand 6,076 ft.; T.D. 6,087 ft.; S.D. for storage.

Grin-Jackson No. 2 H. F. Moore, H. Master Sur., 2 mi. SE of Crockett. W.O.C. 105 ft.

Leon County

Kelly & Fox No. 1 Bryant, A. M. Coultern Sur., 1 mi. E of Marquez. S.D.

Limestone County

C. L. Brown No. 27 N. B. Boyd, R. B. Longbotham Sur., 3 mi. S of Wortham. Loc.

Pure Oil Co. No. 16-T Kendrick, P. Varella Sur., Mexia field. Cg. 8,000 ft.

Stanolind O. & G. Co. No. 1 T. Norris, in Thresher Sur., 5 mi. N of Kosse: 6,500-ft. test. El. 528 ft.; top Georgetown 3,255 ft.

Nacogdoches County

G. C. Collier and Coriey No. 1-A A. T. Mast, 14 mi. SW of Nacogdoches, T. S. Lambert Sur., 750 ft. N of No. 1. El. 198 ft.; W.O.C. 1,065 ft.

Navarro County

Nowlin et al No. 1 Easterling, 1,845 ft. N, 60 deg. E and 1,045 ft. N, 30 deg. W out of SW cor. of 209-ac. tr. in J. Mayor Sur., 2 mi. S of Chatfield. R.U.

Mrs. Jane Robinson No. 1 Fortson Bros., Eli Smith Sur., 5 mi. NE Corsicana. S.D. 150 ft.

T. Sharpe et al No. 1 E. B. McDowell, T. Jordan Sur., ½ mi. S of Bassets. Drlg. 2,950 ft.

Rusk County

J. W. Shipman et al No. 1 Citizens Bank, J. J. T'Barbo Sur., 4 mi. NE of Henderson. S.D. 4,500 ft.

EAST TEXAS

(Border Counties)

Cass County

American Liberty Oil Co. No. 5 Maxie, John Collom Sur. 10¾-in. 2,000 ft.; drlg. 4,850 ft.

Ark. La. Gas Co. No. 1 Nelion, Thomas Gillespie Sur. 16-in. 265 ft.; drlg. 1,798 ft.

Geo. Barham No. 1 Whitfield, R. Bennington Sur. 12½-in. 225 ft.; 8-in. 2,039 ft.

Bay Oil Corp. No. 3 Cobb, G. Crowder Sur. Drlg. 5,735 ft.

R. W. Norton No. 3 W. E. Starke, 13⅜-in. 250 ft.; drlg. 5,384 ft.

United Prod. Co. No. 4 Alliday, P. Evans Sur. Comp.; flw. 60 B.P.D.; T.D. 6,016 ft.

United Prod. Co. No. 4 Belote, H. Holbert Sur. Cg. 5,684 ft.

United Prod. Co. No. 7 Bewley, H. Holbert Sur. 7-in. 5,937 ft.; T.D. 5,990 ft.

United Prod. Co. No. 1 fee, H. Holbert Sur. W.O. 6,070 ft.

United Prod. Co. No. 1-A Starke, D. Gilliam Sur. Swbg.; T.D. 6,050 ft.

Marion County—Rodessa

Arkansas-Louisiana Gas Co. No. 2 Emma Ford, A. D. S. Coy Sur. Drlg. 5,464 ft.

Arkansas-La. Gas Co. No. 1 J. P. Fant-L. P. Cadenhead Sur. Acidized; T.D. 6,-150 ft.; pulled tbg. and resg.

Ark.-La. Gas Co. No. 1 Wade Houston, A. D. S. Coy Sur. 10¾-in. 2,025 ft.; drlg. 5,609 ft.

Fohs Oil Co. No. 1 W. T. Nelion, R. Bennington Sur. Loc. moved to SE cor. 70-ac. Nelion tr. Drk.

Fohs Oil Co. No. 2 M. Reynolds, A. D. S. Coy Sur. Drlg. 6,244 ft.

Holcomb & Thomasson No. 1 Gray-Taylor, A. D. S. Coy Sur. Drlg. 5,390 ft.

Mid-Continent Pet. Corp. No. 4 Sory, A. D. S. Coy Sur. Drlg. 4,648 ft.

Hunter Co. No. 3 Fonda, A. D. S. Coy Sur. W.O.S.R. 6,143 ft.

Shell Pet. Corp. No. 1 L. Henderson, R. Bennington Sur., Lot 8. Comp.; flw. 524 B.P.D.; T.D. 6,013 ft.

Union Prod. Co. No. 5 Hutchinson, A. D. S. Coy Sur. Drlg. 2,280 ft.

United Prod. Co. No. 3 Hutchinson, A. D. S. Coy Sur. Drlg. 5,006 ft.

United Prod. Co. No. 4 Hutchinson, A. D. S. Coy Sur. Drlg. 5,242 ft.

Panola County

Danciger O. & G. Co. No. 1 Tatum, A. Bissell Sur. Rng. 7-in.; T.D. 6,514 ft.

Magnolia Pet. Co. No. 2 E. A. Hull, Thos Applewhite Sur. Cg. 8,672 ft.

WEST TEXAS WILDCATS

Andrews County

American Liberty O. Co. No. 1 E. Cowden sec. 14, Blk. A-55, P.S.L. Sur. S.D. 5,002 ft.

M. J. Delaney No. 1 E. P. Moore, sec. 12 Blk. A-20, P.S.L. Sur. T.D. 4,579 ft.;

M. S. Forgeron et al No. 1 Lockhart & Brown, C NE¼ sec. 20, Blk. A-41, P.S.L. Sur. S.D. 179 ft.

Gulf Oil Corp. No. 1 State, sec. 8, Blk. 14 T.D. 2,997 ft.; blew out; trying to kill gas.

Bailey County

Etz & Robinson No. 1 Enochs, Tract 66 League 182 Floyd Co. School Land Sur. S.D. 1,970 ft.; W.O.C.

J. O. Whittington No. 1 McKelvey. Drlg. 2,009 ft.

Brewster County

F. C. Dodson No. 1 Texas American Synd sec. 66, Blk. 10, G.H.&S.A. Sur. S.D 6,001 ft.; straight reaming.

Storey No. 1 Wilson, sec. 3, Blk. 212, T.& St.L. Sur. S.D. 2,545 ft.

Cochran County

Texas Co. No. 1 Slaughter. T.D. 4,960 ft.; P.B. to 4,880 ft.; to shoot.

P. N. Wiggins et al No. 1 Dean, NE cor. League 58, Martin Co. School Lands. T.D. 4,800 ft.; fsg.

Pete Wiggins et al No. 1 C. Slaughter Dean, C Lab. 26 League 92, Unacomb Co. Sch. Ld. T.D. 5,020 ft.; testing on pump.

Concho County

Sam Murray No. 1 R. G. Armor, sec. 105, T.&N.O. Sur. Spudded and S.D.

Coke County

Barnett Pet. Co. No. 1 J. R. Mims, sec. 39, Blk. W, T.&P. Sur. S.D. 975 ft.

H. E. Ogden et al No. 1 Rawlins, sec. 390 Blk. B-21. S.D. 515 ft.

Crane County

Gulf Oil Corp. No. 2 McKnight, sec. Blk. B-21. T.D. 5,404 ft.; P.B. to 3,650 ft.; shot; to pump.

Wilcox O. & G. Co. No. 1 McKnight, sec. 9, Blk. 46, Twp. 3s, G.M.M.B.&A. Sur. Drlg. 5,563 ft.

Crockett County

Moore Bros. No. 1 P. Perner, sec. 37, Blk. 2, I.&G.N. Sur. Drlg. 4,606 ft.

J. N. Simpson No. 1 Hoover, sec. 2, Blk. FF, G.C.&S.F. Sur. R.U.S.T.

Stewart & Cormas No. 1 Hoover, sec. 1, Blk. FF, B.B. Sur. Drlg. 1,726 ft.

Culberson County

C. A. Jarrell et al No. 1 C. M. Caldwell, C of SW¼ sec. 15, Blk. 100, P.S.L. Sur. Spudded 50 ft. and S.D.

Dawson County

R. Albaugh No. 1 D. Hogg, SE of SE sec. 17, Blk. 34, Twp. 4n, T.&P. Sur. R.U.S. T. 3,560 ft.

E. L. Wilson No. 1 Scanlon, Sec. 83, Blk M, E.L.R.R. Sur. S.D. 4,965 ft.; P.B. to 4,933 ft.; S.D.

Dickens County

C. E. Litchfield No. 1 Harris, sec. 354 Blk. 1, H.&G.N. Sur. S.D. 1,600 ft.; no report.

J. F. Morrisey et al No. 1 C. L. Bird, sec. 290, Blk. 1, H.&G.N. Sur. Drlg. 841 ft.

Edwards County

A. P. Carter No. 1 F. D. Sweeten, S&E sec. 48, Blk. 2, B&B Sur., 1½ mi. E of Rock Springs. Fsg. 5,096 ft.

Ector County

Landreth Oil Corp. No. 2 M. Scharbauer, 990 ft. from S and 2,310 ft. from E, sec. 21, Blk. 44, Twp. 1n, T.&P. Sur. Loc.

Shasta Oil Co. No. 1 K. Sands sec. 32 Blk. 44, T.&P. Sur. Drlg. 4,522 ft.

El Paso County

Tri-State Oil Co. No. 1 Kinkle. Drlg. 3,164 ft.

Fisher County

I. J. Allen No. 1 H. S. Newman, Lot 49, Bastrop Co. Sch. Lds. Drlg. 413 ft.

Bond Oil Corp. No. 1 N. Bertram, 1 mi. S of Sylvester. Drlg. 1,270 ft.

Consolidated Oil Co. et al No. 1 Florida. Drlg. 2,800 ft.

General Crude Oil Co. No. 1 Morrow, 330 ft. from NE and SE of W 80 ac. of E 162 ac. of S half sec. 185, Blk. 2, H.&T.C. Sur. M.I.R.

Gaines County

Amerada Pet. Corp. No. 1 Matthews, sec. 417, Blk. G, C.C.S.D.&R.G.N.G. Sur. T.D. 5,018 ft.; plugging back to 4,997 ft.

Continental Oil Co. No. 2 Jones, sec. 1, Blk. A-8, P.S.L. Sur. Drlg. 2,333 ft.

R. H. Gill No. 1 S. R. Simpson, sec. 8, Blk. C-44, P.S.L. Sur. S.D. 4,800 ft.; testing pipe.

Shell Pet. Corp. No. 1 Robertson, 440 ft. from N and W, sec. 344, Blk. G. Loc.

Garza County

M. L. Richards No. 1 Slaughter. Machine.

Hockley County

Frank A. Bates No. 1 Lockett, C of NE of S sec. 5, Blk. 1, P.S.L. Sur. S.D. 5,260 ft.

The Texas Co. No. 2 Slaughter, Labour 77, League 38, Zavalla Co. Sch. Lds. Drk.

Howard County

W. F. McDermott et al No. 1 Lucas, sec. 18, Blk. 29, Twp. 1n, T.&P. Sur., 5 mi. N of Dodge pool. Drlg. 900 ft.

Hudspeth County

Haymon Krupp Oil & Ld. Co. No. 1 Thaxton, SE¼ sec. 34, Blk. 74, Twp. 6.; drlg. 3,205 ft.

Haymon Krupp No. 1 Briggs, sec. 24, Blk. 73, Twp. 7, T.&P. Sur. Drlg. 710 ft.

Jeff Davis County

H. D. Wilcox et al No. 1 Jones-Coffield. S.D. 3,315 ft.; ran csg.

Loving County

Barnett Pet. Co. No. 1-A Johnson, sec. 2 Blk. 57, Twp. 1, T.&P. Sur. S.D. 2,-006 ft.

Barnett Pet. Corp. No. 1-B W. D. Johnson, sec. 12, Blk. 56, Twp. 1, T.&P. Sur. T.D. 2,939 ft.; to set csg.

Carpenter & Grierson No. 1 Mrs. Bennie Barnes, sec. 22, Blk. C-25, P.S.L. Sur.

Continental Oil Co. No. 1 E. C. Marrs, sec. 20, Blk. 54, Twp. 2, T.&P. Sur. Drlg. 3,357 ft.

Martin County

J. L. Green et al No. 1 O. B. Holt, C of Labour 20, Lge. 319, Garza Co. Sch. Lds. T.D. 1,370 ft.; hole caving.

Nolan County

M. S. Ingleright & L. E. Hults No. 1 Blank, Blk. 1-A, H.&T.C. Sur., near Decker. Drlg. 3,322 ft.

Pecos County

Adams No. 1 A. A. Gray, 150 ft. from S and 1,470 ft. from E, sec. 593, Blk. 105, G.C.&S.F. Sur., 12 miles N of Fort Stockton. Loc.

Messenger & Osburn No. 1 Humble-Young, sec. 49, Blk. 10, H.&G.N. Sur. T.D. 1,807 ft.; shot; C.O.

S. Thompson No. 1 Elsinore Cattle Co. sec. 54, Blk. D, G.C.&S.F. Sur. Drlg. by drill stem 5,444 ft.

Trans-Pecos Oil Co. No. 1 Popham. T.D. 535 ft.; lost hole; skd. 25 ft. south; drlg. 1,136 ft.

W. K. Tuller No. 2 Perry. T.D. 1,920 ft. Drlg. 1,945 ft.

Wilcox O. & G. Co. No. 1 Serf, sec. 27, Blk. 130, T.&St.L. Sur. Loc.

Presidio County

L. C. Britt No. 4 fee, C NW¼ sec. 113 Blk 12, G.H.&S.A. Sur. Drlg. 2,960 ft. in new hole.

Sadler Bros. et al No. 1 Bagley. S.D. 3,315 ft.

Reagan County

K. E. Sherman No. 1 W. E. Friend, SW cor. sec. 3, Wm. Allen Sur. Drlg. 2,-425 ft.

Moore Bros. No. 1 University, sec. 8, Blk. 7. Fsg. 2,860 ft.; no report.

Reeves County

Barnett Pet. Corp. No. 1 Ely, sec. 38, Blk. 71, P.S.L. Sur. 12 mi. NW of Toyah. Drlg. by at 1,400 ft.

Runnels County

Price & Koener No. 1 Beddo, sec. 51, Thompson Casey Sur. Drlg. 715 ft.

K. Z. Oil Co. No. 1 H. Fleitner, E. C. Good Sur. S.D. 3,306 ft.; C.O.

Stevens & Glover No. 1 Fowler, sec. 150, E.T.R.R. Sur., 2 mi. NE of Ballinger T.D. 1,095 ft.; S.D.

Schleicher County

J. M. Cooper No. 2 B. Page sec. 40, Blk. G.H.&S.A. Sur. T.D. 4,710 ft.; U.R. csg.

Tex.Tor Oil Corp. No. 1 Judkins & Spencer, C of SW¼ sec. 33, Blk. A, A.&B. Sur. T.D. 3,133 ft.; U.R. csg.

Scurry County

Robinson Drlg. Co. No. 1 Martin, sec. 147, H.&T.C. Sur. Drlg. 1,737 ft.

T. G. Shaw Oil Co. No. 1 First Natl. Bank, Drlg. 1,678 ft.

Sterling County

Wilcox O. & G. Co. No. 1 Kinnebrew Est., sec. 101, Blk. 2, H.&T.C. Sur. Drlg. 2,323 ft.

Snowden & McSweeney No. 1 Harris, sec. 110, Blk. 6, H.&T.C. Sur., 20 mi. SE of Sterling City. Drlg. 312 ft.

Sutton County

Ordovician Oil Co. No. 1 Evans, sec. 1, L. Stubblefield Sur., 32 mi. SE of Sonora. Top Strawn 2,860 ft.; Bend. 3,198 ft.; drlg. 3,236 ft.

Terrell County

D. & S. Oil Co. No. 1 Sam Bell. S.D. 345 ft.

Tom Green County

Humble O. & R. Co. No. 1 Lewis & Wardlaw, sec. 5, Blk. 17, H.&T.C. Sur. T.D. 700 ft.; reaming.

Ward County

L. F. White et al No. 1 Rector-Monroe, E cor. sec. 3, Blk. 1, W.&N.W. Sur. Top Del. L. 4,635 ft.; top Del. sd. 4,670 ft. T.D. 4,710 ft.; fsg.; flowing 15 bbls. day.

Yoakum County

American Liberty Oil Co. No. 1 Claywater. Drlg. 4,522 ft.

American Liberty Oil Co. No. 1 Sawyer, SE¼, sec. 702, Blk. D. Loc.

Denver Prod. & Ref. Co. No. 1-A Whittenburg, sec. 830, Blk. 4. Drlg. 1,616 ft.

J. L. Greene et al No. 1 Nevels, sec. 709, Blk. D. T.D. 140 ft.; R.U.R.

Skelly and Sun Oil Co. No. 1 Kiser, sec. 640, Blk. D. Drlg. 1,950 ft.

Standard of Texas No. 1 M. B. Sawyer, sec. 576, Blk. D, J. H. Gibson Sur. Drlg. 5,238 ft.

L. Stogner et al No. 1 J. A. Blade., sec. 103, Blk. D. Loc.

Texas Co. No. 1 Walker, sec. 794, Blk. D El. 3,656 ft.; T.D. 5,180 ft.; P.B. to 5,-162 ft.; shot; acid.; swbg. oil and wtr.

P. N. Wiggins et al No. 1 Bartlett, sec. 359, Blk. D. T.D. 190 ft.; R.U.R.

RANGER (CENTRAL TEXAS) DISTRICT

Brown County

C. R. Cox, Tr., No. 1 Jan Lee, sec. 11, B.B.B.&C. Sur., NE cor. county. S.D. 240 ft.

R. A. J. Cox et al No. 1 H. A. Nichols, 10 mi. SE of Cross Cut, F. Wardsziski Sur., sec. 477. Drlg. 2,200 ft.

Callahan County

Hal Hughes No. 1 Poindexter, sec. 350, Geo. Hancock Sur., 2 mi. NE of Oplin. Drlg. 1,500 ft.

J. C. Jackson et al No. 1 Thompson, 2 mi. S. Eula, sec. 30, B.B.B.&C. Sur. S.D. 1,500 ft.

Phillips Pet. Co. No. 1 Cozart, 1 mi. NW Scranton, M. Cherry Sur. Drlg. 675 ft.

Coleman County

J. F. Brock No. 1 J. H. Livingston, SE cor. SW¼ county, J. D. Waters Sur. No. 208. Spud and S.D.

Dixie O.&G. Co. No. 1 Reaves, 6 mi. NW Bangs, J. M. Rhine Sur. No. 629. S.D. 805 reprs.

Comanche County

N. D. Gallagher et al No. 1 Mrs. B. I. Terry, Desdemona pool, N. H. Kuykendall Sur. Drlg. 4,220 ft.

Dobbs Oil Co. No. 1 Hodges, sec. 11, Blk. 2, H.&T.C. Sur. Drlg. 900 ft.

Eastland County

G. D. Chastain et al No. 1 Weddington, 4 mi. N Cisco, sec. 496, S.P.R.R. Sur. T.D. 2,080 ft.; fishing.

Hickok Prod. & Dev. Co. No. 1 Van Parmer, NW cor. county, sec. 477, S.P.R.R. Sur. Drlg. 1,860 ft.

J. D. Kittrell No. 1 Reynolds, 5 mi. E of Carbon, sec. 23, H.&T.C. Sur., Blk. 1. S.D. 600 ft.

Monark O. & G. Co. No. 1 Downtain, sec. 14 H.&T.C. Sur. Blk. 4, 3 mi. N Eastland. S.D. 2,140 ft.

Erath County

Arnold Oil Co. No. 1 McMillan, 2 mi. SE of Desdemona, T. H. Dixon Sur., Abst. 1,103. Drlg. 500 ft.

Hoffman & Page No. 1 Clayton, D. J. O. Millard Sur., 2 mi. SE Desdemona. Drlg. 1,800 ft.

Haskell County

E. W. Marland & H. B. Drake No. 1 Cor-others. 6 mi. S Haskell, sec. 67, D. E. Zaaz Sur. Drlg. 2,850 ft.

Jack County

Bennett Pet. Corp. No. 1 J. S. Rhodes, 2½ mi. NE Bryson, W. Higgins Sur., Abst. 2,199. Loc.

J. P. Burrus No. 1 W. J. Eatherly, J. Helmstutler Sur. Drlg. 1,575 ft.

Hanlon-Buchanan, Inc., No. 1 Rankin, 2 mi. NE Rhodes pool, J. W. Matlock Sur., Abst. 1,479. T.D. 2,873; W.O.C.

Hanlon-Buchanan, Inc., No. 1 Worthings, E edge Avis, S.A.&M.G. Sur., Abst. 589. T.D. 3,500 ft.; S.D.O.

H. B. Madden No. 1 J. L. Mask, sec. 2708, T.E.&L. Sur. S.D. 3,000 ft.

Nelson Oil Synd. No. 1 Henderson, 2 mi. SW Bryson, A. S. Ensworth Sur., Abst. 1,789. T.D. 3,002 ft.; tstg.

Panhandle Ref. Co. No. 1 D. R. Sewell, 4 mi. E of Bryson, Mary Hamilton Sur., Abst. 262. Sd. 3,049-62 ft.; T.D. 3,225 ft.; S.D.O.

Perren & Gillespie No. 1 Clayton Bros., L. Knight Sur., Abst. 324, 2 mi. NE Bryson. Spdg.

O. J. Perrin No. 1 J. S. Rhodes, 3 mi. NE Bryson, J. W. Coates Sur. Loc.

Taubert & McKee No. 1 Eatherly, 3 mi. NW of Gibbtown, SE cor. county. J. H. Henderson Sur. Spd. and S.D.

R. A. Westbrook No. 1 W. Knox, sec. 83, B.B.B.&C. Sur. S.D. 3,775 ft.

Joe Worsham et al No. 1 Cash, 3½ mi. NE of Bryson, I. White Sur., Abst. 895. T.D. 3,210 ft.; drlg. by tools.

Jones County

Butler & Horne No. 1 Mrs. R. Cox, 6 mi. E. Hamlin, sec. 3, G.H.&H. Sur. Drlg. 1,185 ft.

E. P. Campbell et al No. 1 L. H. Lee, 5 mi. S Hawley, sec. 16, T.&P. Sur., Blk. 16. Drlg. 200 ft.

Fain, McGaha & Roberts No. 1 Daugherty, 2 mi. S Sandy Ridge pool, sec. 37, T.&P. Sur., Blk. 15. Spudded.

Fain & McGaha Oil Corp. No. 1 Francis Olson, 3 mi. NE Avoca, sec. 190, B.B.B. &C. Sur. U.R. 1,920 ft.

Falls Ref. Co. No. 1 Harris, 4½ mi. NE Hawley, sec. 47, T.&P. Sur., Blk. 15. Drlg. 1,660 ft.

Farris & Ungren & Frazier No. 1 Ida Nolan, 2 mi. E of Stamford, sec. 3, B.B.B. &C. Sur. Drlg. 1,450 ft.

Felmont & Adams No. 1 Woodson, 1½ mi. SE Avoca, sec. 200, B.B.B.&C. Sur. U.R. 10-in. 1,250 ft.

W. L. Herring et al No. 1 J. W. Grogan, ½ mi. SE Truly, Maria Rita Longario Sur. Drlg. 925 ft.

T. D. Humphrey No. 1 Alston, NE cor. county, 440 ft. from N and 1,320 ft. from E of E 150 ac. of S 300 ac. of N 400 ac. of sec. 16, H.&T.C. Sur., Blk. 3. Loc.

T. D. Humphrey No. 1 Fielder, 2½ mi. E Anson, sec. 34, O.A.L. Sur. Loc.

Iron Mountain and Humble No. 2 Jones & Stasney, 3 mi. NE of Avoca, sec. 196, B.B.B.&C. Sur. Sd. 1,582 ft.; L. 1,580-87 ft.; T.D.; est. 500 bbls.; tstg.

Kleiner & Brown, Eagle Oil Co. No. 2 Fields, Samuel Andrews Sur. No. 191, 3½ mi. E Hawley. Drlg. 1,185 ft.

Maro Oil Co. No. 1 Webb, 220 ft. from N and W of sec. 2, C.&M.R.R. Sur., ¾ mi. NW Lueders. Loc.

M. A. Mead No. 1 H. Osment, S.D. 500 ft.

Oil States Expl. Co. No. 1 Olson, 4 mi. N Avoca, sec. 182, B.B.B.&C. Sur. Spd.

Owen M. Murray et al No. 1 Rial, 2 mi. E Avoca, 330 ft. from N and E of W½ of NW¼ sec. 198, B.B.B.&C. Sur. Digging cellar.

Riddle et al No. 1 J. D. Freeman, 8 mi. SW Anson, sec. 6, T.&P. Sur., Blk. 17. T.D. 2,487 ft.; retreating.

Roeser & Pendleton No. 1 Rosenquist, 4½ mi. NE of Avoca, sec. 181, B.B.B.&C. Sur. T.D. 2,140 ft.; rng. 5-in.

Shaheen Oil Co. et al No. 1 Jenson, 2 mi. E of Avoca, sec. 198, B.B.B.&C. Sur. T.D. 1,570 ft.; drlg. 1,625 ft.

Southern Oil Co. No. 1 B. W. Thane NE cor. County. Andrew Jones Sur. 114. T.D. 2,247 ft.; U.R. 6⅝-in. 2,780 ft.

Stanton & Miller No. 1 Gaither, 4½ mi. N of Anson, sec. 38, B.B.B.&C. Sur. Drlg. 825 ft.

Ungren & Frazier et al No. 1 Carl Ecdahl, 3¼ mi. NE Avoca, sec. 188, B.B.B.&C. Sur. Drlg. 2,170 ft.

C. E. Waite, Trust, No. 1 Ray, 3½ mi. SE of Stamford, sec. 7, D.&D.A. Sur. Drlg. 360 ft.

Palo Pinto County

W. H. Clement No. 1 Federal Life Ins. Co., 2 mi. W Mineral Wells, sec. 51, T.&P. Sur., Blk. A (E of B). S.D. for pipe 400 ft.

Bill Cole et al No. 1 J. W. Harris Est., NW cor. county, De La Garza Sur. Drlg.

Paul Garrett No. 1 Mabry heirs, NE cor. county, sec. 2,572, T.E.&L. Sur. S.D 470 ft.

W. K. Gordon et al No. 1 Johnson, 5 mi. N. Gordon, John Bird Sur. Drlg.

Henry Hobbs et al No. 1 Bessie Holt, 4 mi. S. Graford, sec. 1,783, T.E.&L. Sur. S.D. 200 ft.

Lone Star Gas Co. No. 1 Hart Oil Corp., CWL county, sec. 19n, T.&P. Sur., Blk. 3, 4,000-foot test. Drlg. 2,825 ft.

Earnest Lloyd et al No. 1 Bailey, 3 mi. NE Graford, sec. 2,003, T.E.&L. Sur. S.D. 1,802 ft.

Shackelford County

Joe DeGrazier No. 1 Harbough, E cen. part of county, 150 ft. from S and 435 ft. from W of NW¼ sec. 1,563, T.E.&L. Sur. Digging cellar for 4,500-foot test.

Owens-Snebold Oil Corp. No. 1 Hatertus sec. 163, B.B.B.&C. Sur. Rng. 10-in. 1,380 ft.

Pardue et al No. 1 M. Davis, 5 mi. S Bluff Creek pool, sec. 20, T.&P. Sur., Blk. 13. Drlg. 1,400 ft.

Stephens County

Barnett Pet. Corp. No. 1 J. Q. Corbett, 4 mi. SE Ivan, sec. 3, S.P.R.R. Sur., Blk 3. Marble Falls 3,994-95 ft.; est. 10,000,000 ft. gas; drlg. plug.

Clark & Cowden et al No. 2 Echols Heirs, Blk. 3. T.D. 4,017 ft.; fsg.

W. B. Hamilton No. 1 B. O. Grant, CWL of county, sec. 63, B.A.L. Sur. 2,500-ft. test; T.D. 2,052 ft.; U.R. 8-in.

O. J. Perren No. 1 J. K. P. Hughes, NE cor. County of NW¼ sec. 6 A.B.&M. Sur., Abst. 2,683. P.B. to 3,970 ft. to whipstock and drill new hole.

Stonewall County

General Crude Oil Co. No. 1 W. J. Bryan, 7 mi. N Hamlin, Subd. 10, Wm. Vardeman Sur. No. 347. Sd. 4,347-52 ft.; T.D 4,372 ft.; P.B. to 3,509 ft.; treated with 3,000 gals. acid; no results; retreating.

General Crude Oil Co. No. 1 B. F. Harrison, NW cor. D. Harcrow Sur., 1½ mi. N of No. 1 Bryan. Drlg. 2,900 ft.

Tarrant County

E. E. Hoffpauir et al No. 2 W. H. Davis, 2 mi. S Arlington, H. Blackwell Sur. S.D.O. 2,140 ft.

Taylor County

A. Findley No. 1 Bowles Est., NE cor. county, 389 ft. from E and 608 ft. from S of sec. 26, B.A.L. Sur. S.D. 1,775 ft.; repairs.

Wise County

Latex Oil Co. No. 1 Smith, 3 mi. E of Bridgeport, Jas. Couch Sur. T.D. 4,075 ft.; shot 60 qts. 3,965-85 ft.; C.O. bridge.

Special A.P.I. Meeting Train Announced on Frisco

The Frisco-Alton railroads announce a special train to the eighteenth annual meeting of the American Petroleum Institute at Chicago, November 8-11. The special will leave Tulsa via Frisco lines at 3:45 p.m. Sunday, November 7, arriving Chicago (Union Station) 7:45 a.m. Monday, in ample time for the first session. The equipment for this special train including de luxe double bedroom cars will be air-conditioned and of latest type and design. A service bureau will be provided in the Stevens Hotel by the Frisco-Alton railroads which have also reserved a block of rooms for passengers who will not have to wait in line until rooms are assigned. A special desk will be provided. Delegates who must leave in advance of the special train, will find sleepers on the "Will Rogers" leaving Tulsa 2:10 p.m., arriving Chicago the following morning at 7:45.

A special train returning, will leave Chicago via Alton Railroad at 5 p.m. November 11 and arrive Tulsa 9 a.m. following day. Those desiring return on regular trains may leave Chicago 4:30 p.m. on Alton streamlined "Abraham Lincoln," arriving St. Louis 9:25 p.m., connecting with Frisco "Will Rogers" departing 11:59 p.m., arriving Tulsa 10 a.m.

California Oil Field Operations For August, 1937

According to figures collected by the American Petroleum Institute, the total production of crude oil in California for August amounted to 20,876,078 bbls., an average of 673,422 bbls. per day. This is an increase of 9,686 bbls. per day over July production.

Total stocks of crude and all products in Pacific Coast territory decreased during the month 2,014,255 bbls. The total stocks at the end of the month were 121,224,084 bbls. The total stock decrease for 1937, up to August 31, was 10,119,652 bbls.

One hundred and three wells were completed during the month with an initial daily production of 37,966 bbls., compared with 135 wells completed during July with an initial production of 79,958 bbls.

CRUDE PETROLEUM PRODUCTION

(Figures of production and stocks are in barrels of 42 gallons)

	Total production	Daily average		
Group No. 1—	August	Aug., 1937	July, 1937	Aug., 1936
Belridge—North	488,498	15,758	15,056	10,934
Belridge—South	52,155	1,682	1,624	1,760
Coalinga	519,074	16,744	16,120	15,127
Edison	127,154	4,102	4,352	6,199
Elk Hills	325,646	10,505	10,636	8,321
Fruitvale	275,700	8,893	9,109	8,309
Greeley	53,852	1,737	1,138	
Kern River	492,713	15,894	16,093	13,452
Kettleman Middle dome	3,316	107	115	344
Kettleman North dome	2,431,127	78,423	*79,567	79,582
Lost Hills	109,214	3,523	3,566	3,289
McKittrick	138,257	4,460	4,153	1,739
Midway-Sunset	2,317,585	74,761	73,953	56,666
Mountain View	540,925	17,449	18,412	26,157
Mount Poso	562,617	18,149	16,933	17,574
Round Mountain	417,658	13,473	12,747	11,708
Ten Section	95,514	3,081	2,751	780
Wheeler Ridge	9,917	320	325	341
Group No. 2—				
Capitan	89,468	2,886	2,666	1,487
Elwood	253,948	8,192	8,656	11,491
Rincon	100,711	3,249	2,808	2,105
San Miguelito	107,531	3,469	3,609	1,360
Santa Barbara	19,975	644	651	1,185
Santa Maria	447,409	14,432	13,243	4,957
Summerland	975	32	34	30
Ventura Avenue	1,078,948	34,805	34,732	33,930
Ventura-Newhall	164,539	5,308	4,972	4,960
Watsonville	1,860	60	60	60
Group No. 3—				
Brea-Olinda	189,037	6,098	6,750	7,950
Coyote—East	124,033	4,001	4,067	2,529
Coyote—West	221,033	7,130	7,262	7,979
Dominguez	902,011	29,097	28,131	26,108
El Segundo	348,653	11,247	8,784	331
Huntington Beach	1,105,329	35,656	35,992	35,458
Inglewood	488,405	15,755	15,693	11,995
Lawndale	2,407	78	82	92
Long Beach	1,796,677	57,957	59,617	66,669
Los Angeles-Salt Lake	17,537	566	646	906
Montebello	258,411	8,336	8,765	9,520
Playa Del Rey	246,106	7,939	8,341	11,856
Potrero	6,410	207	207	265
Richfield	273,558	8,824	8,940	6,296
Rosecrans	117,956	3,805	3,395	2,116
Santa Fe Springs	1,325,650	42,763	43,544	45,186
Seal Beach	294,722	9,507	9,290	9,358
Torrance	240,549	7,760	7,591	8,821
Whittier	27,965	902	895	933
Wilmington	1,663,343	53,656	47,663	
Total August	20,876,078	673,422	663,736	578,215
Total July	20,575,815	663,736		
Increase	300,263	9,686		

*Corrected figure. Due to typographical error, this was overstated by 20 bbls. in last month's summary.

OIL FIELD DEVELOPMENT

	New rigs up	Active drilling	Producers comp.	Daily initial output	Active producing	Abd. wells—Drillers	Abd. wells—Producers
Group No. 1—							
Belridge—North		6			44		
Belridge—South					163		
Coalinga		3			918		3
Edison					90	2	2
Elk Hills			1	65	179		
Fruitvale	4	6	3	1,098	155	2	1
Greeley	2	3			5		
Kern River	2	8	2	203	1,324	2	
Kettleman Middle dome		1			3		
Kettleman North dome	5	10	3	2,462	162		
Lost Hills	2	5	2	274	257	1	
McKittrick	1	1	1	30	200	1	
Midway-Sunset	6	9	5	1,282	2,438	3	2
Mountain View	4	8	4	3,035	188		1
Mount Poso	5	7	3	923	258	2	
Round Mountain	7	8	8	2,550	139	2	1
Ten Section	2	2			5	1	
Wheeler Ridge					28		
Group No. 2—							
Capitan		1	1	172	32		
Elwood					82		
Rincon	1	2	1	298	35		
San Miguelito	1	1			13		
Santa Barbara					38	1	1
Santa Maria	7	14	5	2,306	249		
Summerland		1			19		
Ventura Avenue	3	9	1	840	208		
Ventura-Newhall	2	19	3	780	571		
Watsonville					7		
Group No. 3—							
Brea-Olinda		1			357		
Coyote—East		3			80		
Coyote—West	1				34		
Dominguez	3	6	1	1,351	143		
El Segundo	6	15	1	390	25		
Huntington Beach		2	1	75	568		
Inglewood	1	1	1	1,272	195		
Lawndale		1			6		
Long Beach	4	3	2	113	1,241		3
Los Angeles-Salt Lake					113		
Montebello			3	459	202		1
Playa Del Rey		2			206		1
Potrero	1				11		
Richfield	2	2	3	295	283		
Rosecrans	1	4	1	160	79		
Santa Fe Springs		2			655	1	3
Seal Beach		1			113		
Torrance		4	2	150	534		1
Whittier					155		
Wilmington	24	27	44	17,383	251		
Miscellaneous drilling	9	48				13	
Group No. 4, gas fields—							
Buena Vista Lake							
Buttonwillow							
Chowchilla							
Delano							
Dudley Ridge							
Goleta					1		
McDonald Island					4		
Rio Vista	1	1	1	gas	2		
Semi-Tropic	1						
Tracy					6		
Total August	108	247	103	37,966	13,074	31	20
Total July	144	280	135	79,958	12,982	38	30
Decrease (*increase)	36	33	32	41,992	*92	7	10

STOCKS HELD IN PACIFIC COAST TERRITORY BY CALIFORNIA OIL COMPANIES

	August 31, 1937	July 31, 1937	August changes	August 31, 1936
1. Fuel oil residuum and non-gasoline-bearing crude	62,430,828	62,379,641	+51,187	64,829,683
2. Gas oil and diesel oil	6,479,092	6,613,164	—134,072	8,814,002
3. Gasoline-bearing crude	31,185,125	32,456,637	—1,271,512	35,435,137
4. Unblended natural gasoline	2,639,774	2,705,516	—65,742	2,167,460
5. Gasoline (not including distributing and service stations)	10,489,889	11,324,676	—834,787	11,395,488
6. Naphtha distillates	*1,945,097	*1,772,583	+172,514	*1,743,477
7. All other stocks	†6,054,279	†5,986,122	+68,157	†8,806,382
Total	121,224,084	123,238,339	—2,014,255	133,191,629
* Estimated amount of unfinished gasoline contained in Item 6	1,608,405	1,469,847	.....	1,379,759
† Coke included in Item 7	64,783	82,847	.....	313,176

PERSONAL

W. L. CONNELLY, Tulsa, chairman of the board of Sinclair Prairie Oil Company, was in Corpus Christi, Tex., last week inspecting the company's properties. He was accompanied by DANA H. KELSEY, vice president in charge of the land department; BYRON MEREDITH, production superintendent, and H. B. BERNARD, engineering advisor.

JOSEPH H. LEE has joined the Shell Union Oil Corporation as assistant manager of the lubricating department in New York. He replaces A. T. DOANE, who becomes sales manager of the company's eastern division, with headquarters in Boston. Mr. Lee has had wide experience in lubricating oil sales on the Pacific Coast and in Hawaii with the Shell Oil Company, which he joined in 1924. He was area manager in Oakland, Calif., before taking his new post.

H. L. PAYTON, pipe line scout for the Sun Oil Company, who lost an arm in an automobile accident on the Kilgore-Tyler highway about a month ago, is now in his home and recovering rapidly.

RAY W. SMITH, of Houston, Tex., entertained delegates to the Oil-World Exposition at a reception and barbecue given at Tall Timbers lodge on the San Felipe road on Tuesday of this week from 4 to 8 p.m. The affair was given in honor of oil show visitors from abroad.

JAMES C. MILLER has been elected president; C. D. CATHER, vice president, and H. RASSAU, secretary-treasurer of the Brookline Oil Company, which plans to undertake development work in the Wilmington field, California. In addition to these three men the board of directors includes GUS PONGRATZ and K. J. PINGREE.

J. F. HEWSON, Chicago, purchasing agent of the Standard Oil Company of Indiana, is adding to his laurels as an amateur photographer with a genius for finding beautiful subjects for his camera. The cover picture for the October issue of the Illinois Journal of Commerce magazine, "Farewell to Summer," is a piece of his work.

H. N. SEEVERS has joined the Shasta Oil Company as district geologist in the Corpus Christi, Tex., district, effective October 15. He has been associated for several years with the Atlantic Refining Company in the Corpus Christi area, and is largely responsible for the successful development of the McCampbell field in Aransas and San Patricio counties. His new position will also center in that field, where Shasta has holdings.

DR. S. H. KNIGHT, head of the geological department of the University of Wyoming, is directing a group of students on a tour through the Big Horn Basin area.

J. E. BRANTLEY, president of the Drilling & Exploration Company, has left his Los Angeles, Calif., office to spend two weeks in Texas where his company is drilling several wells.

C. H. WHITMAN has been selected as manager of the crude oil purchasing and storage division recently established by the Standard Oil Company of Louisiana in Shreveport. All inquiries regarding the purchase or sale of crude will be handled by Mr. Whitman, M. J. RATHBONE, president, said. The producing department in Shreveport is under the direction of J. R. McWILLIAMS, vice president.

HERBERT R. DAVIS has been elected a director of the Wyoga Gas & Oil Corporation, Williamsport, Pa., to represent Buffalo, N. Y., interests. Mr. Davis has been a consulting engineer 15 years, but has had 30 years' experience as an executive and engineer in natural gas activities. His experience includes operations in nearly all the major gas fields in the United States and Ontario.

T. B. STEELE, manager of the Kewanee Oil & Gas Company, Robinson, Ill., and secretary-treasurer of the Illinois-Indiana Petroleum Association, acted as chairman of the oil and gas session of the mineral industries conference in Urbana, Ill., last Friday afternoon. State regulation of oil and gas production to prevent physical waste was discussed by WILLIAM BELL, of Bell Brothers, Robinson, president of the association and a leading operator in the new Illinois field. WALTER L. SUMMERS, professor of law at the University of Illinois, spoke on changing legal concepts affecting the oil and gas industry. The economic aspects of the heating oil market was the subject of WALTER H. VOSKUIL, mineral economist in the Illinois state geological survey. The conference, October 8 and 9, was held at the University of Illinois.

Do You Remember?

From The Oil and Gas Journal Files

25 YEARS AGO

A group of Pennsylvania clergymen organize the Preachers Oil Company to operate in Butler County in that state.

J. N. Pew, president of the Sun Company and affiliated oil companies, dies in Philadelphia, Pa. David H. Jack, 57, attorney and oil operator, dies in Bradford, Pa. Judge Henry L. Lorenz, heavily interested in the Lima, Ohio, fields in the early days, dies in Washington, D. C.

The state oil inspector in Colorado is said to draw a salary of $11,000 a year. Crude oil production of Colorado averages about 564 bbls. per day.

Wabash Gas Company raises the price of gas to consumers in Robinson, Ill., to 30 cents per 1,000 feet.

20 YEARS AGO

The Mid-Continent Oil & Gas Association is organized at a meeting in Tulsa. J. H. Evans is its first president and O. H. Leonard, temporary secretary. The executive committee consists of other prominent Mid-Continent oil men.

There are 359 refineries in the United States, with a total capacity of 1,265,325 bbls. of crude oil daily. Refineries now in the course of erection number 118.

A 15,000,000-foot gas well south of Muskogee has William Jennings Bryan the "Peerless Leader" as one of its owners.

10 YEARS AGO

The first shipment of electrically-welded pipe line pipe has arrived in the field consigned to Dixie Gulf Gas Company for a line from Shreveport, La., to Houston, Tex. It filled 225 cars. The entire order will fill 1,800 cars.

Buckeye Pipe Line Company buys all of the Pure Oil Company's gathering systems in the state of Ohio, and negotiations are under way for the purchase of Pure's gathering systems in West Virginia by the Eureka Pipe Line Company and in southwestern Pennsylvania by the National Transit Company. Pure Oil Company's trunk line to Marcus Hook, Pa., will not be sold.

CHARLES B. JOHNSON, JR., Gulf Coast district engineer for the Barnsdall Oil Company, has changed his headquarters from Victoria, Tex., to Thibodaux, La.

B. C. KINCADE, vice president of the Gulf Refining Company, Houston, Tex., has returned from an extended vacation trip which took him to Quebec and other points in Canada.

JO P. CAPPEAU, oil broker and former producer, returned Monday of this week to his office in Tulsa from Water Mill, Long Island, where he and MRS. CAPPEAU had spent several months in their summer home.

H. F. PIERCE, geologist for the Sun Oil Company, has been transferred from the Dallas, Tex., office to San Angelo, Tex., to do laboratory work, and FINLEY DOYLE, geologist for the company in San Angelo, has been transferred to the Tulsa office.

J. E. ROBERTS, of Whiting, Ind., a member of the chemical laboratory staff of the Standard Oil Company of Indiana, has been reelected to the executive committee of the petroleum division of the American Chemical Society. Work of the society is carried on through 19 divisions, covering every major field of chemical science.

GENE HANRATTY, former district superintendent for the Gulf Pipe Line Company at Goose Creek, Tex., has been transferred to the Beaumont district of the company, where he will be in charge of operations also. W. RAY SLOAN, foreman under him at Goose Creek, has been transferred to Houston, and the Goose Creek district of the pipe line company is now included in the Houston district.

PARAGRAPHS

THOMAS MIDGLEY, JR., vice president of the Ethyl Gasoline Corporation, was a speaker October 6 at a joint celebration in New York of Columbia University and the American Chemical Society commemorating the hundredth anniversary of the birth of Charles Frederick Chandler, famous pioneer industrial chemist. Mr. Midgley's subject was "Man-Made Molecules."

M. E. MOCKLEY has resigned as vice president in charge of manufacturing of the Warren Petroleum Company, Tulsa, to engage in the natural gasoline manufacturing business individually. Warren officers and employes gave a buffet supper in his honor at the Tulsa Club and presented him with a gold wrist-watch. Mr. Mockley went to the Warren organization in 1935 from the Amerada Petroleum Corporation, where he had been general superintendent of the natural gasoline department. Since joining Warren he has supervised the construction of two large gasoline plants at Monument, N. M., and Galva, Kans., for the company. H. W. HARTS, Mr. Mockley's assistant since 1925, first with the Amerada and then with Warren, will assume management of Warren's plants.

W. D. ELLIOTT and C. R. BARTON, Ponca City, Okla., representing the Continental Oil Company, were in Lusk, Wyo., recently to close negotiations for the purchase of service station property in that town.

V. E. COTTINGHAM, director of production for the Texas Railroad Commission, Austin, was called to the bedside of MRS. COTTINGHAM and their 2-year-old daughter in a Dallas, Tex., hospital, where they were taken after being injured recently in an automobile accident. Mrs. Cottingham, the child and a maid were driving from Austin to Wichita Falls to meet Mr. Cottingham, who had been attending a Panhandle gas hearing in Amarillo. Near Rising Star the car overturned. All the occupants suffered severe bruises and lacerations, from which they were reported this week to be recovering.

E. G. ROBINSON, formerly geologist for the Shell Oil Company in Los Angeles, Calif., has been transferred to St. Louis, Mo., headquarters of the Shell Petroleum Corporation, where he will be assigned to a new position as geologist in charge of exploration in Illinois. Mr. Robinson is widely known in the Mid-Continent and in the Rocky Mountain area, where he was stationed before he went to Los Angeles.

J. H. LOUDON, assistant to J. U. STAIR, vice president in charge of production of the Shell Oil Company in the Los Angeles, Calif., office, has left for The Hague, Holland, where it is understood he will be assigned to one of the companies forming the Royal Dutch-Shell group. Mr. Loudon has been located on the West Coast for 15 months after previous assignments in Venezuela, New York and Texas with the Shell organization.

C. M. YORK, head of the oil accounting department of the Carter Oil Company, Tulsa, spent last week in Shreveport and Baton Rouge, La., on business for his company.

H. C. STEWART has been made purchasing agent for the Texas Crusader Oil Company, Inc., in Shreveport, La. He formerly was associated with the Oil Center Tool Company in that city.

RALPH C. RILEY, Tulsa, well-known oil producer in Oklahoma and Kansas fields, who had been suffering from protracted illness, underwent an operation in a Tulsa hospital recently and is believed to be recovering.

FRED L. RICE, formerly sales promotion manager in Chicago for the Phillips Petroleum Company, is now in Bartlesville, Okla., as an assistant to R. C. JOPLING, director of public relations. Mr. Rice will also edit The Shield, one of the Phillips employe publications.

O. H. KILPATRICK, San Antonio, Tex., geologist and mining engineer and an operator in the Benavides field in Southwest Texas, has transferred a 26,000-acre block concession in the Darien Mountains of the Choco district in Colombia, South America, to O. M. BOYNTON, oil operator of Corsicana, Tex., and associates.

PROF. HOWARD THOMPSON LEWIS, director of research in the Harvard Graduate School of Business Administration, was the speaker Monday of this week before the fifth annual executives' night meeting and dinner of the Purchasing Agents Association of Tulsa, held at the Tulsa Club. Well-known oil men made up the audience.

He Has Seen Fast Going

The past 13 years have seen some pretty fast going for L. T. Barrow. At the beginning of that period, a young man fresh from university work, he was starting his career in the oil industry as a member of the Humble Oil & Refining Company's geological staff in Houston, Tex. Today he is a director and vice president of that organization, the largest oil company in Texas.

L. T. BARROW

Mr. Barrow received his master's degree in geology at the University of Texas in 1923. He remained for a year as an instructor in the university's department of geology and then joined the Humble. He soon was advanced to division geologist in the company's San Antonio division. His service in this position resulted in his being promoted to chief geologist in 1929, and he was transferred to the home office in Houston. The manner in which he directed that vital branch of Humble's activities resulted in his being elected to the board of directors in February of this year.

Following the death last April of Chester O. Swain, director of the Standard Oil Company of New Jersey, Wallace E. Pratt, vice president of Humble, was chosen in June to fill the vacancy in the Jersey directorate. Mr. Pratt resigned his post with Humble, and Mr. Barrow was elected to succeed him. In his new position Mr. Barrow has supervision over Humble's far-reaching geological, land and lease operations throughout Texas and in New Mexico and Louisiana.

ARNOLD C. DAHL, division exploitation engineer at Pampa, Tex., for the Shell Petroleum Corporation, is on a vacation in northern Minnesota, with MRS. DAHL.

E. B. LYMAN, assistant manager of the Standard Oil Company of New Jersey's public relations department, returned to his New York office last week after a vacation trip.

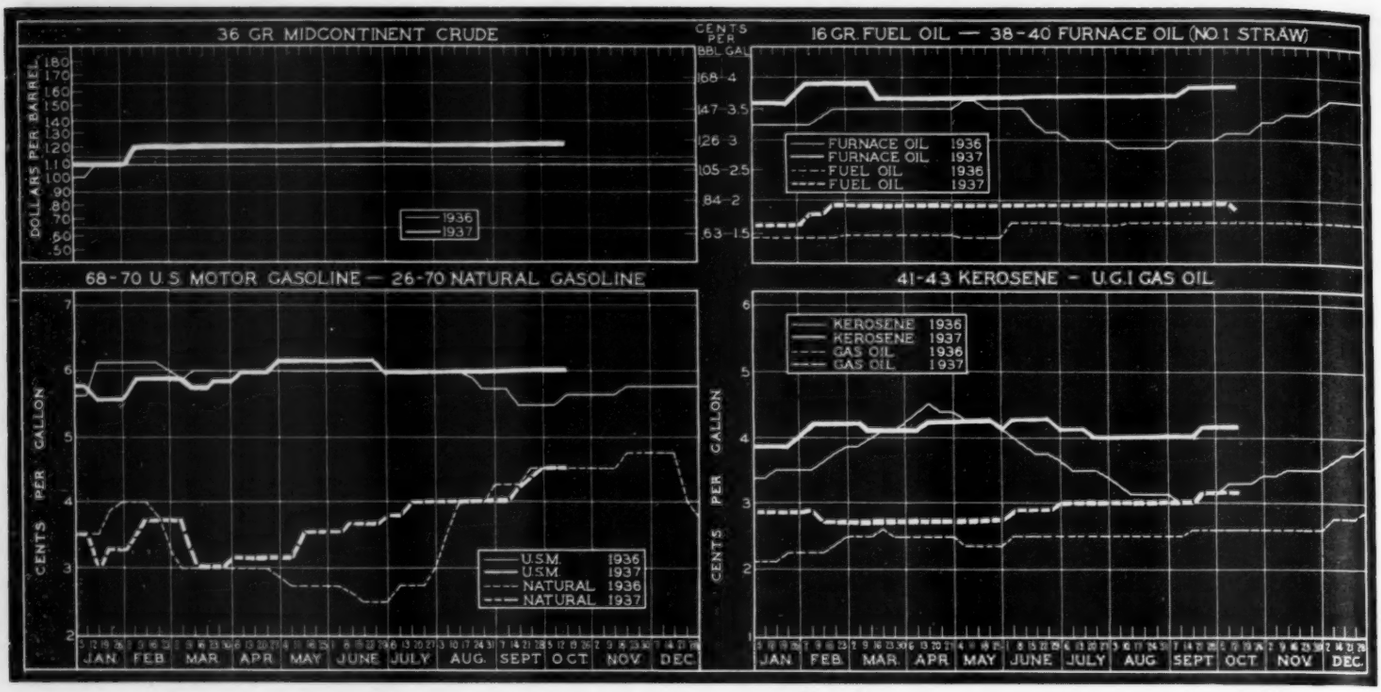
TORREY WEBB, assistant to C. E. OLMSTED, president of the Texas Company of California, left Los Angeles harbor on October 2 for New York on a combined business and pleasure trip.

M. A. DAVEY, pioneer independent operator of Palestine, Tex., who discovered the Boggy Creek field in Anderson County, has given his city and county an iron lung respirator to be used wherever and whenever necessary.

OTTO D. DONNELL, president of the Ohio Oil Company, has been making a tour of Mid-Continent and Gulf Coast oil fields. He spent several days in Tulsa and Bartlesville, Okla., and then started for Dallas and Houston, in Texas.

CLYDE BECKER, geologist and regarded as an authority on the geology of western Oklahoma, was host last Friday evening at a dinner meeting for the Oklahoma members of the National Oil Scouts Association in Chickasha, Okla.

H. H. REARDON, general superintendent for the Columbian Carbon Company, is in Corpus Christi, where plans are being completed for a 25,000,000-foot carbon black plant to be erected in the Saxet field. He is assisted by H. J. GLAXON, who will be in charge of construction.



Representative Mid-Continent Quotations on Crude Oil and Refined Products, Basis Oklahoma (Group 3)

Group 3 Gasoline Market Sags With Seasonal Decline in Motor Travel

By T. F. SMILEY

The seasonal decline in motor travel was having its effect on the tankcar gasoline market in the Group 3 area this week. Not only was plenty of low-octane material available at 4 cents—a quarter-cent below the price which it had held for more than three months—but the grades in the higher brackets were wobbly. Contributing to the increasing softness of the motor fuels were shipments into northern markets of third-grade material of extremely low octane rating from Michigan, usually sold at concessions.

Little Room for Complaint

The regular autumn drop in tankcar prices ordinarily begins several weeks earlier than it did this year, and feeling was general that the market had been behaving pretty well and that, everything considered, there was little room for complaint at this moment. Among explanations for its creditable performance is the fact that consumption, though subsiding noticeably of course with the end of the vacation season, is maintaining a high level. Another is that throughout the summer tankcar prices for all grades were lower than they would have been but for an abnormal situation brought about by price-cutting in certain areas; and since the prices already were below the point at which ordinary business considerations would have placed them, they resisted the back-pull of descending demand longer than usual. Still another reason lies in the fact that operating costs and the price of crude are higher than last year, making higher gasoline prices imperative.

Evidence points to the fall and winter consumption of gasoline exceeding that of last year. Notwithstanding the failure of business generally to reach the volumes predicted, the family car is being kept busy and bus lines and truck fleets are making heavy drafts on gasoline supplies. Football games are helping immensely in raising the gallonage record. These things, however, serve merely as brakes on sliding consumption. They cannot stop the slide. Nevertheless, market observers say they see little reason for expecting any sharp drop in prices unless weather conditions should encourage manufacture of so much burning oil that distress stocks of gasoline result.

Refined Oil Market Barometer

Softness in the tankcar gasoline market accompanying the seasonal slackening in consumption. Heating oils now becoming a center of interest. Sharp rise in demand in the past week with scattered price concessions disappearing. Natural gasoline holding its strength with contract movement keeping field stocks at a low level. Lubricants showing signs of weakness.

MID-CONTINENT. Gasoline unsteady. Heating oils firmer. Natural gasoline strong.

EAST COAST. Marked pickup in demand for furnace oils. Less underselling in gasoline.

GULF COAST. Kerosene and heating oils strong. Gasoline weak. Bunker oil irregular.

CALIFORNIA. Export gasoline up. Gas oil stronger, with prices higher.

PENNSYLVANIA. Gasoline off. Kerosene, fuel oil, wax strong. Bright stocks weak.

CHICAGO. Gasoline weak. Distillates and kerosene firm. Heavy fuels softer.

Natural gasoline, though no longer displaying the pyrotechnical quality which marked it a few weeks ago, was maintaining a sturdy stride. Manufacturers who were being kept on the jump by importunities of refiners and jobbers, have settled down to the routine of shipping on contract orders booked for the month. Prices were unchanged, but with the recession in the price of third-grade refinery material there now is only a quarter-cent difference between that grade and the 26-70 natural.

A thoroughly satisfactory fall and winter business is in prospect. All the Texas output continues to go to the Gulf for use of refiners in that area or for terminal storage to fill export and East Coast orders. An order for a part cargo for December lifting was closed a few days ago, and inquiries for a full cargo were in the market this week.

Heating Oils Firm

Jobbers were asking for prompt shipment on heating oils and all the lighter grades were firm, notwithstanding scattered reports of necessitous selling. The No. 2 and No. 3 grades were especially in demand and closely held. Advent of cool weather in northern areas, where thousands of new burner installations have been made since last year, has imparted a stimulus to the call for furnace oils. Kerosene was in steady demand, and tractor fuels were still fairly active. Gas oil for cracking purposes was finding ready outlets.

Although substantial contract movement of lubricating oils was reported by some Mid-Continent refiners, the spot market in this group was soft. Neutrals were said to be especially vulnerable. Underselling by certain refiners was named as a principal cause of the spotty market. Wax was off.

Fuel Oil Consuming Season Opened by Lower Temperatures in East

By H. STANLEY NORMAN

NEW YORK, Oct. 12.—Tumbling of temperatures to mid-autumn levels late last week definitely launched the domestic fuel oil consuming season in the northeast Atlantic district. The pick-up in demand came when the market for No. 2 fuel oil was sluggish. Insufficient time has elapsed to register any increase in the tankcar or tank-wagon market, but considerable slack was taken up within 24 hours.

Refiners and jobbers have been preparing for the first winter call on domestic fuel oil, but until late last week considerable price cutting by peddlers was reported. Major refining units have maintained the No. 2 fuel oil price at 5¼ cents for several weeks, but some material has been reaching north Atlantic terminals at figures permitting shading, particularly in the tank-wagon market.

Despite the moderate temperatures until late in the week, fuel oil consumption in this and more northern parts of the eastern seaboard has been satisfactory for the season. One barometer indicative of the fuel oil movement is the tanker charter market from the Gulf Coast to north Atlantic ports. The tanker market strengthened 2 to 3 cents per barrel last week and, if seasonal trends are followed, it will continue upward for several months. One tanker was chartered for movement of a cargo of fuel oil from the Gulf Coast to New York at 34 cents per barrel, up 2 cents and most boat owners were quoting from 1 to 2 cents higher. The boat reported chartered is to load on the Gulf Coast October 23. Two other boats were chartered for transportation of light crude oil to the north Atlantic districts at 29 cents per barrel, which is also a cent or more higher than recent rates.

The tone of kerosene was somewhat mixed. Early in the week there were reports the posted tankcar price of 6.3 cents at plants of large eastern refiners could be bettered on firm offer in some directions. The report was either unfounded or the concession covered only a small quantity of material which was immediately absorbed since the product was reported firm at end of the week. One company was reported to have cut tankcar kerosene prices in the middle Atlantic states a half cent. Most sellers in the Philadelphia district raised fuel oil prices a quarter to a half cent. Atlantic Refining Co. was leader in the upward movement raising No. 2 fuel and industrial oils a half cent in tank-wagon delivery. Other companies added a quarter of a cent to the tankcar price of similar fuel oils, bringing the market on a par with that in New York.

In October's revision of Bunker C and diesel fuel oil prices, Standard Oil Co. of New Jersey made adjustments in several foreign points of delivery, but there was no change in the domestic schedule. Bunker C fuel oil at Bermuda was raised a dime to $1.95 and at Havana, Cuba, a similar increase was posted, making the price there $1.60. Diesel oil was offered in the new schedule for the first time at $2.50 in Bermuda. Diesel oil was also raised at several South American ports. At Montevideo, Uruguay, the new posting is 80 shillings per metric ton, an increase from 77 shillings 6 pence. Advances were also posted at Pernambuco, Brazil, to 90 shillings from 87 shillings and 6 pence. The same prices are now posted at Rio de Janerio and Santos, Brazil.

Reports of softening in the Bunker C fuel oil market in domestic trade have subsided and inquiry indicates little, if any, of this grade is available in New York at less than the majority posting of $1.35 per parrel. During the past two weeks reports have been frequent that $1.30 and as little as $1.25 per barrel would bring out material.

The gasoline market in this territory remained unchanged, but there were less frequent reports of trading below the market. Most of the depressed spots in Brooklyn, Queens and Manhattan have returned to normal service station price, but northern New Jersey is still unsettled. Most Manhattan, Brooklyn, Bronx and Queens stations are now quoting gasoline at 5 gallons of "regular" for 98 cents. With the New York City sales tax of 2 cents added, the cost to consumers in the various boroughs is 20 cents per gallon, the same as in Westchester County and surrounding New York points. Prices in New Jersey are lower, ranging from 16 to 18 cents for "regular" gasoline.

Most open market tankcar sales of 65-octane gasoline in New York were reported made at about 7½ cents during the week. The major refiners continue to quote 7¾ cents to the New York trade and since the bulk of business is on a contract basis with the large New Jersey and New York plants, the higher figure probably covers a good portion of the actual turnover. Tank-wagon prices are steady and unchanged.

Brooklyn's 800 service station operators were facing labor difficulty at the end of the week. The 6,000 employes were ordered on strike by Walter J. Burke, president of Local 20408 of Gasoline Station Attendants Union, affiliated with A. F. of L. The strike was called after the Brooklyn Dealers Association rejected contract demands which had been under consideration for three weeks. The Brooklyn local union demanded a $25 minimum, a 10 per cent wage increase for those receiving above the minimum, an eight-hour day and a closed shop. The dealers offered a $20 minimum, with no increase above this figure, and an open shop. During August, Brooklyn gasoline prices tumbled to a low of 6 gallons for 91 cents, starting an epidemic of price cutting which spread in milder form to the other three boroughs. The price skid was halted short of complete surrender during the latter part of August and has been gradually returned to a normal level.

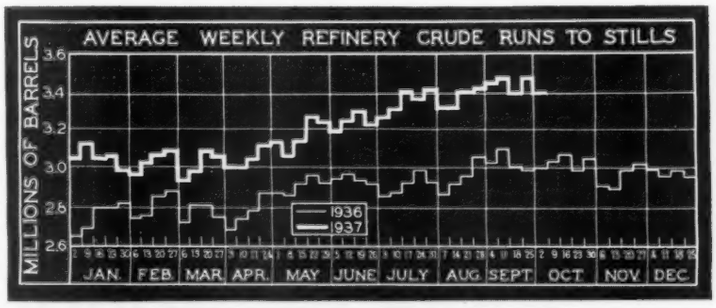
Announcement in bulletins posted at its bulk plants throughout the East and other parts of the country by Texas Co., of a single set of rules to govern company relationship with dealers probably will be followed by similar declarations by other companies. Market observers in the East last week-end registered keen interest in actual working of the new policy and its results will be watched by competitors. Texas Co.'s plan of posting its policy for solicitation of new business is the second departure from some of the older marketing practices. A few weeks ago, W. S. Farish, president of Standard Oil Co. of New Jersey, said all price changes would be accompanied by a complete explanation to the public of the factors dictating adjustments. With Texas Co. taking leadership in publicly condemning the loaning of equipment to dealers and advancing other inducements, some see a hope for solution of a knotty problem.

The lubricating oil market re-

(Continued on Page 120)

A. P. I. Weekly Refinery Statistics

Figures for the week ending October 9 not available due to Columbus Day holiday



Stocks of Crude Oil in the United States

(BUREAU OF MINES ESTIMATES)

Week ending September 25, 1937	307,974,000 barrels
Week ending September 18, 1937	309,405,000 barrels
Week ending September 26, 1936	293,534,000 barrels

RETAIL OIL MARKETS

Tank-wagon and filling station prices on gasoline and kerosene furnished by the larger marketing firms

Prices as of October 12, 1937

Taxes

The gasoline quotations given in the following tables include the 1-cent federal tax, as well as state, county and city taxes. The gasoline is the regular or standard grade. In most areas a third grade and a premium grade are also available.

Standard Oil Co. (Indiana)

	Gasoline			Kero.
	Tank wag.	Dir.	Inc. tax	tank-wag.
Chicago, Ill.	15.5	13.5	4.0	10.1
Decatur	15.5	14.0	4.0	10.1
Joliet	15.5	14.0	4.0	10.1
Peoria	15.5	14.0	4.0	10.1
Quincy	15.3	13.8	4.0	9.9
Davenport, Ia.	15.5	14.0	4.0	†13.1
Des Moines	15.3	13.8	4.0	†12.9
Mason City	15.7	14.2	4.0	†13.3
Sioux City	15.5	14.0	4.0	†13.1
Duluth, Minn.	17.3	15.8	5.0	10.9
Mankato	16.9	15.4	5.0	10.5
Twin Cities	16.9	15.4	5.0	10.5
Lacrosse, Wis.	16.9	15.4	5.0	10.5
Green Bay	17.2	15.7	5.0	10.8
Milwaukee	16.8	15.3	5.0	10.4
Detroit, Mich.	15.4	13.9	4.0	9.8
Grand Rapids	16.5	15.0	4.0	10.9
Saginaw	16.3	14.8	4.0	8.5
Evansville, Ind.	17.0	15.5	5.0	†10.6
Indianapolis	17.2	15.7	5.0	†10.8
South Bend	17.4	15.9	5.0	†9.6
Fargo, N. Dak.	16.9	15.4	4.0	11.5
Minot	16.1	16.6	4.0	12.7
Huron, S. Dak.	17.3	15.8	5.0	10.9
Kans. City, Mo.*	14.9	13.4	4.0	8.0
St. Louis*	15.2	13.7	4.0	9.8
St. Joseph*	14.9	12.4	4.0	9.0
Wichita, Kans.	14.4	12.9	4.0	8.0

*State tax 2 cents, 1-cent city tax and 1-cent federal tax. †Does not include 4-cent state tax. ‡Iowa kerosene prices include 3-cent state tax.

(Exclusive of state general sales taxes, except Indiana and South Dakota.)

Discounts to commercial consumers: On purchases per month off tank-wagon prices: 1,000 gallons or more, 1.5 cents off; minimum delivery 25 gallons.

Stanolex Fuel Oil in Chicago

Effective Dec. 7, 1936, f.o.b. Chicago tank-wagon prices: Range oil, 1-99 gallons, 8.8 cents; 100-149 gallons, 7.8 cents; 150 gallons and over, 7.3 cents. Stanolex No. 1, 1-99 gallons, 8.8 cents; 100-149 gallons, 7.8 cents; 150 gallons and over, 7.0 cents. Stanolex furnace oil, 1-149 gallons, 7.8 cents; 150 gallons and over, 7.0 cents. Stanolex A, 1-399 gallons, 5.75 cents; 400 gallons and over, 4.75 cents. Stanolex B, 1-799 gallons, 5.75 cents; 800 gallons and over, 4.75 cents.

Atlantic Coast District

STANDARD OIL CO. OF NEW JERSEY

	Gasoline			Kero.
	Tank wag. dlr.	Tank car con'r.	Inc. tax	tank-wag.
Atl'tic City, N. J.	13 5	12 0	4.0	9.0
Newark	13 5	12 0	4 0	9 0
Annapolis, Md.	15 6	14.1	5.0	9.5
Baltimore	15 0	13 5	5 0	9 0
Cumberland	17 4	14 9	5 0	10 0
Wash'g'n, D. C.*	12 5	11 0	3 0	9 5
Danville, Va.	18 2	15 7	6 0	12.9
Norfolk	17 0	14 5	6 0	11 5
Petersburg	17 3	14 8	6 0	11 7
Richmond	17 3	14 8	6 0	11 7
Roanoke	18 5	16 0	6 0	12.9
Charles'n, W. V.	17 8	15 3	6 0	12.6
Parkersburg	17 1	14 6	6 0	11 2
Wheeling	17 0	15 5	6 0	12 2
Charlotte, N. C.	19 4	16 9	7 0	12 6
Hickory	19 9	17 4	7 0	13 0
Mt. Airy	19 7	17 2	7 0	12 8
Raleigh	19 0	16 5	7 0	12 1
Salisbury	19 5	17 0	7 0	12.7
Charleston, S. C.	18 0	15 5	7.0	11.1
Columbia	19 0	16 5	7.0	12.1
Spartanburg	19.7	17.2	7.0	12.9

*Standard of N. J. has discontinued posting service-station prices at all above points except at Washington and Baltimore where station prices of 16.0 and 18.5 cents, respectively, are in effect.

Price basis to commercial consumers, effective March 8, 1937, in Maryland, District of Columbia, and in Arlington and Fairfax counties in Virginia; and March 12 in New Jersey: To contract accounts purchasing at least one full compartment at time by hose connection, on yearly purchases: From 2,500 to 100,000 gallons, consumer tank-wagon price at time and place of delivery; 100,000 gallons per year, consumer tankcar price plus .5 cent per gallon. Consumer tank-wagon price generally will be equivalent to dealer tank-wagon price less .5-cent per gallon.

Effective May 15, 1937, in North and South Carolina, West Virginia and Virginia (except Arlington and Fairfax counties): Commercial consumers taking deliveries of 50 gallons (W. Va., 100 gallons) or more at one time will be billed at posted consumer tank-wagon price. Accounts taking deliveries of less than 50 gallons (W. Va., 100 gallons) will be billed at 4 cents per gallon over posted consumer tank-wagon price. Generally the posted consumer tank-wagon price will be equivalent to the dealer price less .5 cent per gallon.

Discount for kerosene, 1 cent off tank-wagon price for 25 gallons or more under contract (contract not necessary in Baltimore) except no discount in New Jersey.

Southern District

STANDARD OIL CO. OF KENTUCKY

	Gasoline			Kero.
	Tank wag.	Net dir.	Inc. tax	tank-wag.
Atlanta, Ga.	21.0	18 0	7.0*	†12.0
Augusta	21.0	18 0	7.0	*14.0
Macon	21.5	18.5	7.0	*14.5
Savannah	19.0	16.0	7.0	*12.0
Birm'ham, Ala.	22 0	19 0	8 0	12 0
Mobile	22 0	19 0	9 0	11.0
Montgomery	22 0	19 0	9 0	14.5
Jackson, Miss.	21.0	18.0	7.0	*13.0
Vicksburg	20 5	17 5	7.0	*13 0
Jacksonville, Fla.	20 5	17 5	8 0	†10 0
Miami	20 5	17.5	8 0	†12.0
Pensacola	22 0	19 0	9.0	12.0
Tampa	20 0	17.0	8 0	10.5
Lexington, Ky.	20.0	17.0	6.0	11.0
Covington	19 5	16.5	6.0	11.0
Louisville	20 0	17.0	6.0	10.5
Paducah	20.0	17.0	6.0	10.0

Price basis to tank-wagon consumers: Effective January 4, 1937, 3 cents per gallon below tank-wagon price. Kerosene prices in all states subject to 2 cents discount except in Kentucky where prices are net.

*Includes 1-cent state tax. †Subject to 2-cent discount.

Montgomery, Ala., has a county tax of 1 cent per gallon, and a city tax of 1 cent per gallon on gasoline, in addition to state tax; and 1 cent per gallon on kerosene. Mobile, Ala., has a city gasoline tax of 2 cents per gallon; Birmingham, Ala., has a city gasoline tax of 1 cent per gallon; Pensacola has a city gasoline tax of 1 cent.

Rocky Mountain District

CONTINENTAL OIL CO.

	Gasoline		Kero.
	Dealer	Inc. tax	tank-wag.
Denver, Colo.	17 5	5.0	11.5
Grand Junction	20 0	5 0	15 0
Pueblo	16.0	5.0	10.5
Casper, Wyo.	18 0	5.0	11.5
Cheyenne	18 0	5 0	13.0
Butte, Mont.	19 5	6 0	15.5
Billings	21.0	6.0	15.5
Helena	21.5	6 0	15.5
Great Falls	21.5	6.0	15.5
Salt Lake, Utah	19 5	5 0	16.0
Twin Falls, Ida.	21.5	6.0	18.0
Boise	21.5	6.0	18.0
Albuquerque, N. M.	17.5	6.5	12.0

Ohio

STANDARD OIL CO. OF OHIO

	Gasoline			Kero.
	Tank wag. vided con'r.	Dir.	Inc. tax	tank-wag.
Ohio points	17.0	16.0	5.0	*13.5

*Includes state tax of 1 cent.

Discounts to commercial consumers, contract: Effective Aug. 12, 1937, for Ohio state-wide, 20,000 gallons or over per month, 1 cent per gallon off commercial consumer tank-wagon price. Tank-wagon price is price to commercial consumers in deliveries of 25 gallons or more; less than 25 gallons gets service-station price. Price to undivided dealers is same as to commercial consumers.

Nebraska

STANDARD OIL CO. OF NEBRASKA

	Gasoline			Kero.
	Tank wag.	Dir.	Inc. tax	tank-wag.
Omaha	17 9	16 4	6 0	10.4
McCook	18 0	14 0	6 0	10 0
Norfolk	18 3	16 8	6 0	10.8
North Platte	18.7	17 2	6.0	11.2
Scotts Bluff	19.4	15.9	6.0	11.9

Discounts to commercial consumers for tank-wagon deliveries covered only by standard commercial consumers contract, effective Jan. 1, 1935.

Pacific Coast Territory

STANDARD OIL CO. OF CALIFORNIA

	Gasoline			Kero.
	Tank wag.	Serv. sta.	Inc. tax	tank-wag.
San Francisco	17.5	18.5	4.0	11.5
Los Angeles	17.0	18.0	4.0	9.0
Fresno, Calif.	18.5	19.5	4.0	12.0
Phoenix, Ariz.	21.0	22.0	6.0	‡16.0
Reno, Nev.	20.0	21.0	5.0	13.0
Portland, Ore.	20.0	21.0	6.0	13.5
Seattle, Wash.	20.0	21.0	6.0	13.5
Spokane	23.0	24.0	6.0	16.5
Tacoma	20.0	21.0	6.0	13.5

‡Includes 5-cent state tax.

Discounts to dealers: On gasoline, off tank-wagon price, to 100 per cent dealers, 3 cents; to split dealers, 2 cents. To commercial consumers: on tank-wagon price: on single deliveries of 40 gallons and over, advance quantity discount extended at time of delivery, 3 cents. Service station schedule applies on single deliveries less than 40 gallons. On kerosene in tankcar, transport truck and trailer delivery, 3 cents off tank-wagon price; plant deliveries to jobbers, 2.5 cents below tank-wagon.

New York and New England

SOCONY-VACUUM OIL CO., INC.

	Gasoline			Kero.
	Tank wag. dir.	Tank car con'r.	Inc. tax	tank-wag.
Albany, N. Y.	15.0	13.5	5.0	9.0
*Met. N. Y.:				
Manh't'n, Br'nx	15.0	13.5	5.0	9.0
Staten Island	15 0	13 5	5 0	9.0
Q'ns & Brklyn	15 0	13 5	5 0	9.0
Buffalo	15.8	14.04	5 0	8.5
Rochester	15 5	14 17	5 0	8.5
Syracuse	15 5	14 12	5 0	9.5
Boston, Mass.	12 5	13 5	4 0	8.5
Portland, Me.	15 8	13 5	5.0	8.75
Manch'ter, N. H.	16 3	14 0	5 0	9.5
Burlington, Vt.	15.9	13.9	5.0	9.5

*Does not include 2 per cent city sales tax which is calculated on basis of net retail price exclusive of state and federal taxes.

Price basis to undivided dealer: Posted dealer tank-wagon price less .5 cent. Price basis to commercial consumer: Effective Nov. 15, 1936, monthly purchases of 25,000 gallons and over, consumer tankcar prices at delivery point plus .5 cent per gallon; monthly purchases of 5,000 to 25,000 gallons, undivided dealer price at delivery point: Monthly purchases under 5,000 gallons, pay divided dealer tank-wagon price at delivery point.

Oklahoma and Arkansas

CONTINENTAL OIL CO.

	Gasoline		Kero.
	Dealer	Inc. tax	tank-wag.
Muskogee, Ok.	15 0	5 0	7.0
Oklahoma City	14 0	5 0	8 0
Tulsa	14 0	5 0	6 0
Ft. Smith, Ark.	15.5	5.0	8.0
Little Rock	18 0	7 5	9 5
Texarkana	15.5	5.0	8.5

Texas

	Gasoline			Kero.
	Tank wag.	Serv. sta.	Inc. tax	tank-wag.
Dallas, Tex.	14 0	18 0	5 0	8 0
Fort Worth	13.5	18.0	5.0	5.0
Houston	14.5	18.5	5.0	8.0
San Antonio	14.5	18.5	5.0	8.0

Central South District

STANDARD OIL CO. OF LOUISIANA

	Gasoline			Kero.
	Tank wag. dlr.	Tank car con'r.	Inc. tax	tank-wag.
N. Orleans, La.	20 5	18 0*	10 0	†13.0
Baton Rouge	18 5	16 0	8 0	12.0
Alexandria	19 0	16 5	8 0	12 0
Lafayette	19 5	17 0	8 0	13.0
Lake Charles	19 5	17.0	8 0	12.5
Shreveport	18 0	15 5	8 0	9.5
Knoxville, Tenn.	21.5	19.0	8.0	14 0
Memphis	19 5	17 0	8 0	12.0
Chattanooga	21 0	18 5	8 0	13.5
Nashville	20 5	18 0	8 0	11.5
Bristol	20.25	19.0	8.0	14.5

*Includes 2-cent parish tax. †Includes 1-cent parish tax and 1-cent state tax.

Standard of La. has transferred all stations to dealers except in New Orleans and Baton Rouge where station prices are 24 and 22 cents per gallon, respectively.

Price basis to commercial consumers: Effective May 15, 1937, deliveries of 50 gallons or more in one delivery takes posted consumer tank-wagon price. Accounts taking deliveries of less than 50 gallons at one time pay posted consumer tank-wagon price plus 4 cents per gallon. Generally, the posted consumer tank-wagon price will be equivalent to the dealer price less .5 cent per gallon.

Louisiana kerosene prices include 1-cent state tax.

Pennsylvania, Delaware and Part of New England

ATLANTIC REFINING CO.

	Gasoline			Kero.
	Tank wag. dlr.	Tank car con'r.	Inc. tax	tank-wag.
Philadelphia, Pa.	14 0	12 5	5 0	10 5
Pittsburgh	15 5	13 5	5 0	11.0
Allentown	15 0	13.5	5.0	11.0
Erie	14 5	13 0	5 0	10 0
Scranton	15.0	13.5	5.0	11.0
Altoona	15.5	13.5	5 0	11.0
Dover, Del.	14 5	....	5.0	11.0
Wilmington	14.5	....	5.0	11.0
Springf'd, Mass.	13 3	....	4 0	9.0
Worcester	14.8	....	4.0	9.0
Hartford, Conn.	14 1	....	4 0	9 0
New Haven	14.0	....	4.0	9.0
Providence, R. I.	14 0	....	4.0	8.5

Price basis to undivided dealers, dealer tank-wagon price less .5 cent per gallon. Price basis to commercial consumers in Pennsylvania and Delaware, effective March 11, 1937: Consumers under contract using 100,000 gallons or more per year full compartment hose deliveries, tankcar plus .5 cent. Consumers under contract using less than 100,000 gallons per year compartment hose deliveries, undivided dealer price. Consumers under contract less than full compartment delivery, consumers not under contract less than full compartment delivery, and consumers not under contract full compartment delivery, divided dealer price. Less than 25 gallons, tank-wagon delivery, 4 cents per gallon above undivided dealer price.

Naphtha

STANDARD OIL CO. (INDIANA)

	Tank-wagon*
Oleum spirits	15.7
V.M.&P. naphtha	16.0
Cleaners' naphtha	15.0
Stanisol	15.0

*Prices include 3-cent Illinois tax, but not 1-cent federal tax or 2 per cent retail occupational tax.

Prices f.o.b Chicago. Each price subject to discount of 1 cent per gallon for 150 gallon lots if covered by contract.

Canada*

3 Star Imperial Gasoline
IMPERIAL OIL, LTD.

	Tank-wag.	Inc. tax	Kero. tank-wag.
Halifax, N.S.	24 0	8.0	18.0
St. John, N.B.	24 0	8 0	18.0
Montreal, Que.	21 0	6 0	17.0
Toronto, Ont.	22 0	6 0	17.0
Hamilton, Ont.	22 0	6 0	17.0
Winnipeg, Man.	27.5	7.0	20.7
Brandon, Man.	29 8	7 0	22.8
Regina, Sask.	29 5	7 0	22.0
Saskatoon, Sask.	29 8	7 0	24.8
Edmonton, Alta.	29 5	7 0	24.2
Calgary, Alta.	27 0	7 0	21.5
Vancouver, B.C.	23 0	7 0	23.0

*Imperial gallon used in Canada.

Divided dealers pay tank-wagon price. Discount to undivided dealers, 1 cent below tank-wagon price. In maritime provinces both divided and undivided dealers pay tank-wagon price.

Retail Price Changes

Standard Oil Co. (Indiana) September 24 advanced tank-wagon kerosene .5 cent in St. Joseph.

New York Market

(Continued from Page 119)

mained practically unchanged with probably a little better demand from domestic jobbers and exporters. Price adjustments have gradually whittled into the lube oil price structure until many jobbers are taking advantage of the opportunity to replenish stocks for the annual winter motor oil change campaigns.

J. E. Moorhead, executive secretary, and S. A. Hartwell, Jr., assistant secretary, addressed a recent meeting of Canadian jobber members of the Pennsylvania Grade Crude Oil Association in Montreal.

PRICES OF REFINED PRODUCTS

All quotations f.o.b. plant in cars for interstate or export movement except as otherwise noted

Prices as of October 12, 1937

The following quotations are exclusive of the federal excise taxes of 1 cent a gallon on gasoline and 4 cents on lubricating oils.

Refinery Gasoline

OKLAHOMA (Group 3)—

U. S. Motor grades:		
62 oct. and below (3d gr.)	.04¾	.05
63-66 octane	.05¼	.05⅜
67-69 octane	.05⅜	.05⅞
70-72 octane (regular)		.06
60-62 400 grades:		
62 oct. and below (3d gr.)	.04¾	.05
63-66 octane	.05⅜	.05½
67-69 octane	.05⅝	.05⅞
70-72 octane (regular)		.06
64-66 375	.05	.05¼
68-70 360	.05⅛	.05⅜

NORTH TEXAS—

U. S. Motor grades:		
62 octane and below	.04¾	.05
63-66 octane	.05⅜	.05½
67-69 octane	.05⅝	.05⅞
70-72 octane (regular)		.06
60-62 400	.04¾	.05
64-66 375	.05	.05¼

NORTH LOUISIANA (Ark., N. La. and Miss. delivery)—

U. S. Motor grades:		
62 octane and below		.05½
63-66 octane	.05⅝	.05⅞
67-69 octane	.06	.06¼
70-72 octane (regular)		.06½

ARKANSAS (Ark., N. La., Miss. del.)—

U. S. Motor grades:		
62 octane and below		.05½
63-66 octane		.06
67-69 octane	.06⅛	.06¼
70-72 octane (regular)		.06½

CHICAGO (Based on Group 3)—

U. S. Motor grades:		
62 octane and below	.04¾	.05
63-66 octane	.05¼	.05½
67-69 octane	.05⅝	.05⅞
70-72 octane (regular)	.06	.06⅛
60-62 400 grades:		
62 octane and below	.04¾	.05
63-66 octane	.05¼	.05½
67-69 octane	.05⅝	.05⅞
70-72 octane (regular)	.06	.06⅛
64-66 375	.05	.05⅛
68-70 360	.05⅛	.05⅜

PENNSYLVANIA (inland refineries)—

58-60 U. S. Motor:		
Below 60 octane	.05½	.05⅝
60-64.9 octane	.07⅝	.07⅝
65-70 octane	.07½	.07¾
64-66 375	.06⅛	.06¼
68-70 350	.06¼	.06⅜

CALIFORNIA (domestic movement)—

54-58 U. S. Motor	.07½	.08½
58-60 400, 65 oct. and higher	.08¼	.09¼

EAST COAST (Domestic)—

U. S. Motor below 60 octane:		
*New York (Bayonne)	.06¼	.06½
Baltimore	.06	.06¼
U. S. Motor, 60-64.9 octane:		
*New York (Bayonne)	.07¼	.07¾
Philadelphia	.07¼	.07½
Boston	.07¾	.08¼
Baltimore	.07¼	.07½
Charleston, S. C.	.07¼	.07¾
U. S. Motor, 65 and above:		
*New York (Bayonne)	.07½	.08
Philadelphia	.07¼	.07¾
Boston	.07¾	.08¼
Baltimore	.07½	.08
Charleston, S. C.	.07¾	.08¼

*All grades of gasoline one-eighth to one-fourth cent less for barge shipments. New York harbor prices are for New York and New England delivery. Prices for New Jersey delivery one-fourth cent lower.

GULF COAST (domestic)—

U. S. Motor grades:	
Below 60 octane	.06⅛
60-64.9	.06¼
65 octane and higher	.06¼

Naphtha

PENNSYLVANIA (inland refineries)—

50-52 450 (blending)	.05½	.05⅝
52-54 450 (blending)	.05½	.05⅝
54-56 450 (blending)	.05⅝	.05¾

Natural Gasoline

OKLAHOMA (Group 3)—

Grade 26-70		.04½
Grade 18-55	.05⅜	.05½

NORTH TEXAS—

Grade 26-70		.04⅝
Grade 18-55	.05½	.05⅝

CALIFORNIA—

75-85 375-390	.06¾	.07½

NORTH LOUISIANA (Ark., N. La. and Miss. delivery)—

Grade 26-70	.04⅝	.04¾

Tractor Fuel

OKLAHOMA (Group 3)—

40-42 gr., 315-325 i.b.p., 110 flash, 540-550 e.p.	.04	.04¼
41-43 gr., 300-350 i.b.p., 110-125 flash, 500-520 e.p.	.04⅜	.04⅝
46-48 gr., 210-230 i.b.p., 480 max. e.p.	.04¾	.04⅞

Kerosene

(All kerosene water white)

OKLAHOMA (Group 3)—

41-43	.04⅛	.04¼
42-44	.04¾	.04½

NORTH TEXAS—

41-43	.04⅛	.04¼

NORTH LOUISIANA (Ark., N. La. and Miss. delivery)—

41-43		.04½

ARKANSAS (Ark., N. La., Miss. del.)—

41-43		.04¾

PENNSYLVANIA (inland refineries)—

45	.05⅜	.05½
46	.05½	.05⅝
47	.05⅝	.05¾

CHICAGO (Based on Group 3)—

41-43	.04	.04¼
42-44	.04¼	.04½

CALIFORNIA (Pac. Coast market)—

38-43 high burning test	.04¾	.06

NEW YORK (Bayonne, N. J.)—

41-43		.06 3/10

***GULF COAST (domestic)—**

41-43		.05¼

*Barge price one-eighth cent lower.

Furnace Oil

OKLAHOMA (Group 3)—

No. 1 prime white, 38-42	.04	.04⅛
No. 1 straw, 38-40	.03¾	.03⅞
No. 2 straw, 32-36		.03¾
No. 2 dark, 32-36	.03⅜	.03⅝
No. 3 zero to 15, 28-32		.03¼
No. 3, 15 and above, 28-32	.02¾	.02⅞

NORTH TEXAS—

No. 1 prime white, 38-42		.04
No. 1 straw, 38-40	.03⅝	.03⅞

NORTH LOUISIANA (Ark., N. La. and Miss. delivery)—

No. 2, 32-36	.03½	.03⅝

ARKANSAS (Ark., N. La., Miss. del.)—

No. 2, 32-36		.03¾

CHICAGO (Based on Group 3)—

No. 1 prime white, 38-40	.04	.04⅛
No. 1 straw, 38-40	.03¾	.03⅞
No. 2 straw, 32-36	.03⅝	.03¾
No. 2 dark, 32-36	.03⅜	.03½
No. 3, zero to 15, 28-32	.03¼	.03⅜
No. 3, 15 and above, 28-32	.02¾	.03

NEW YORK (Bayonne, N. J.)—

*No. 1		.06 3/10
*No. 2		.05½
*No. 4		.05¼

*Barge deliveries one-eighth to one-fourth cent under above tankcar price.

Gas Oil and Fuel Oil

(Gas oil per gal.; fuel oil per bbl.)

OKLAHOMA (Group 3)—

U.G.I. gas oil	.03	.03¼
No. 4, low cold test, 24-28	1.07½	1.12½
No. 4, 15 and above, 24-28	.90	.95
No. 5, low cold test, 18-22	.85	.90
Below 18 fuel oil, industrial	.77½	.82½

NORTH TEXAS—

U.G.I. gas oil	.03	.03⅛
No. 4, low cold test, 24-28	1.07½	1.12½
No. 5, low cold test, 18-22	.82½	.87½
Below 18 fuel oil, industrial	.77½	.82½

NORTH LOUISIANA (Ark., N. La. and Miss. delivery)—

10-14 fuel oil, industrial	.80	.85

CHICAGO (based on Group 3)—

U.G.I. gas oil	.03	.03⅛
No. 4, low cold test, 24-28	1.07½	1.12½
No. 4, 15 and above, 24-28	.90	.95
No. 5, low cold test, 18-22	.85	.90
No. 6, low cold test, 10-16	.80	.85

PENNSYLVANIA (inland refineries)—

36-40	.04⅝	.04⅞

CALIFORNIA—

Los Angeles:		
30-34 gas oil, per bbl.	1.35	1.50
24 plus diesel, per bbl.	1.35	1.45
24 plus diesel (bunkers)	1.55	1.65
12-16 (bunkers at tidewater)	1.05	1.15
10-16 (cargo lots)	.90	1.10
12-17 (tankcars)	.95	1.15
10-17 (high sulfur)	.95	1.15
San Joaquin Valley:		
10-18 (tankcars)	.75	1.00
24 plus diesel, per bbl.	1.40	1.55
24 plus diesel (bunkers)	1.60	1.65
10-16 (bunkers)	1.10	1.15

GULF COAST—

28-30 gas oil	.04¼	.04⅜
28-30 diesel (bunkers)		1.90
Bunkers (bulk cargoes)	.80	.90
Bunker C (bunkers)		1.05

NEW YORK (Bayonne N. J.)—

27 plus, gas oil	.04¾	.04⅞
28-30 diesel (lighterage 6¼c per bbl.)		2.20
28-30 diesel (tankcars)		.05
Bunker C (to ocean-going ships in N. Y. harbor)		1.35
Industrial fuel (tankcars)	.04½	.04¾

Lighterage charge 5c bbl. additional.

Bright and Steam Refined

OKLAHOMA (Group 3)—

Bright Stocks:		
190-200 D, 15-25		.20
150-160 D, 0-10		.17
150-160 D, 15-25		.16½
150-160 E, 15-25		.16
100-110 D, 0-10		.15
Steam refined:		
631 green (treated)		.15½
600 dark green (untreated)		.05

PENNSYLVANIA—

Bright Stocks (Pennsylvania Grade No. 8 color, 140-150 at 210, 545-550 flash):		
10 pour test	.20	.21
15 pour test	.19	.20
20 pour test	.18	.19
25 pour test	.17	.18
Steam refined:		
600	.10½	.10¾
650	.15	.15½
600 Pennsylvania flash	.16½	.17
630 flash	.20½	.21
600 Warren E filtered	.15½	.16

Neutral Oil

(Vis. at 100° F. except Pennsylvania and color N.G.A.)

OKLAHOMA (Group 3)—

Zero to 10 Cold Test:		
150-3		.09
180-3		.10
180-4		.09½
200-3		.10½
200-4		.10
250-3		.11½
250-4		.11
280-3		.12½
280-4		.12
300-3½		.13
400-3½		.14
100-2½ paraffin oil		.06
15-20 Cold Test:		
200-3		.10
200-4		.09½
250-3		.11
250-4		.10½
280-3		.12
280-4		.11½

GULF COAST—

Pale Oils:		
200-3	.07	.07¼
300-3	.07½	.07¾
500-3½	.08½	.08¾
750-3½	.08⅝	.09¼
1,200-3½	.09½	.09¾
1,500-4	.09¾	.10
Red Oils:		
200-5-6	.07¼	.07½
300-5-6	.07¼	.07½
500-5-6	.08	.08½
750	.08¾	.09
1,200-5-6	.09¼	.09½

CALIFORNIA (moving to dom. market)—

Pale Oils:		
100-2½-3	.07¼	.08
200-2½-3	.07¼	.08
300-2½-3	.07¼	.08
400-3-4	.07¼	.08
450-3-4	.07¼	.08
550-3-4	.09	.11
600-3-4	.09	.11
Red Oils:		
200-4-5	.07¼	.08
300-5-6	.07¼	.08
350-5-6	.09¼	.11½
400-5-6	.09¼	.11½
450-5-6	.09¼	.11½
500-5-6	.09¼	.11½
600-5-6½	.09¼	.11¼
700-6½ plus	.09¼	.11½
750-6½ plus	.09¼	.11½
900-6½ plus	.09¼	.11½

PENNSYLVANIA—

150 vis. at 70° F. color, 400-405 flash:		
Zero pour test	.22½	.23
10 pour test	.21½	.22
15 pour test	.21	.21½
25 pour test	.20	.20½
180 vis. at 70° F., 3 color:		
25 pour test	.23	.23½
200 vis. at 70° F., 3 color:		
Zero pour test	.27	.27½
10 pour test	.26	.26½
15 pour test	.25½	.26
25 pour test	.24½	.25

Wax and Petrolatum

(Prices per pound)

OKLAHOMA (Group 3)—

124-126 (a.m.p.) w.c. scale		.03

PENNSYLVANIA (inland refineries)—

122-124 (a.m.p.) w.c. scale	.0295	.0300
124-126 (a.m.p.) w.c. scale	.0295	.0300

NEW YORK—

Wax in bags fully refined:		
122-125 (a.m.p.) wax		.0445
125-127 (a.m.p.) wax		.0455
128-130 (a.m.p.) wax		.0480
130-132 (a.m.p.) wax		.0505
133-135 (a.m.p.) wax		.0535
135-137 (a.m.p.) wax		.0560
124-126 (a.m.p.) w.s.	.0295	.0300
124-126 (a.m.p.) y.s.	.0265	.0280
Petrolatum in barrels, carload lots:		
Dark green		.01⅞
Amber	.02⅞	.03
Extra amber	.03	.03⅛
Lily white	.06⅝	.06¾
Snow white	.07¾	.07⅞
Cream	.05⅝	.05¾

Export Prices

GASOLINE

GULF COAST—

U. S. Motor		.06⅛
60-62 400		.06¼
61-63 390	.06⅛	.06¼
64-66 375		.06⅜

LOS ANGELES—

U. S. Motor grades:		
55-65 octane		.06
65-69 octane		.06⅛
Above 69 octane		.06¼

KEROSENE

GULF COAST—

41-43 prime white		.04⅞
41-43 water white		.05⅛
44 water white		.05⅜

LOS ANGELES—

41-43 water white	.04½	.05

LUBRICANTS

(Pennsylvania Grade)

NEW YORK (f.a.s. in bbls.)—

Cylinder Stocks:		
600 Warren E	.22½	.24½
600 S.R. unfiltered	.20½	.21
630 S.R. unfiltered	.23½	.24
600 flash, S.R.	.24	.24½
630 flash, S.R.	.28½	.29
Bright Stocks:		
8 color	.32	.32½
6½ plus color in dilution	.31½	.32

NEUTRAL OIL

200-3 color	.31	.31½
150-3 color	.27	.27½

PARAFFIN WAX

NEW YORK (prices per pound)—

123-126 a.m.p.		.04125
125-127 a.m.p.		.0425
128-130 a.m.p.		.0450
133-135 a.m.p.		.0525
135-137 a.m.p.		.0550
Crude scale:		
124-126 w.s.	.0295	.0300
124-126 y.s.	.0265	.0280

CRUDE OIL PRICES

Oklahoma, Kansas, North Central and East Central Texas

(January 28, 1937)

East Texas (May 22, 1937)*	$1.35
Van, Tex.†	1.10
Camp Hill, Tex.	1.27
Cass County, Tex.‡	1.25
Talco	.73
Altus and Tipton, Okla.§	1.20
Other fields (see gravity table).	

*All companies. †Humble Oil & Refining Co.; Pure Oil Co. ‡Texas Co. §Gulf Oil Co. Talco by Humble Oil & Refining Co.

West Texas

See gravity table.

Pecos County*	.91
Pecos shallow†	.81

*Shell Petroleum Corp., Gulf Pipe Line Co., and Humble Oil & Refining Co. †Shell Petroleum Corp.

Rocky Mountain States

(Effective January 28, 1937)

Iles, Colo., light*	$1.18
Iles, Colo., heavy*	1.12
Greybull, Wyo.*	1.30
Torchlight, Wyo.*	1.30
Grass Creek, Wyo., light*†	1.30
Grass Creek, Wyo., heavy (Nov. 4, 1936)*†	.62
Hamilton Dome, Wyo. (Nov. 4, 1936)*	.57
Elk Basin, Wyo., light*†	1.30
Frannie, Wyo., heavy*	.62
Frannie, Wyo., light	.82
Hogback, N. Mex.*	1.33
Pondera, Mont. (Jan. 26, 1936)*	1.05
Salt Creek Dutton Creek and Midway, Wyo., take Stanolind's Oklahoma prices on a gravity basis.	
Big Muddy, Wyo.†	1.23
Rock Creek, Wyo.†	1.20½
Lea County, N. M. (see West Texas gravity table)	
Artesia, N. Mex.	.90
Maljamar, N. Mex.	.90
Canon City and Florence, Colo.	1.10
Florence, Colo.	.98
Lance Creek, Wyo.	.97
Sunburst, Mont. (June 5, 1936)	1.20
Cat Creek, Mont.	1.40
Cut Bank, Mont.	1.35

*Standard Oil & Gas Co. †Ohio Oil Co. ‡Continental Oil Co. Cut Bank by Toronto Pipe Line Co.

Middle Western States

OHIO OIL CO.
(Effective January 28, 1937)

Lima	$1.25
Illinois	1.35
Princeton, Ind.	1.35
Midland, Mich. (July 23, 1937)*	1.27
West Branch, Mich. (July 22, 1937)	1.09
Buckeye (July 23, 1937)	1.24¼
Arenac, Mich (July 1, 1937)	1.21
Muskegon, Mich.	1.00
Eastern Kentucky:	
Big Sandy River	1.42
Kentucky River	1.50
Western Kentucky	1.40

*Posted by Pure Oil Co.

Midland, Mich., price posted by Simrall Corp. and Pure Oil Co. includes Greendale, Porter, Beaverton, Crystal and equal grades. West Branch and Arenac by Simrall Corp. Eastern Kentucky crude purchased by Ashland Refining Co., Ashland, Ky. Buckeye posted by Simrall Corp. and Pure Oil Co.

Gulf Coast

(January 28, 1937)

Choctaw and Darrow, La. See note below	
Clay Creek, Tex.	$1.00
Garden Island, La.	1.37
Cleveland, Tex.	1.27
Hardin, Tex.	1.15
Lafitte, La.	1.24
Livingston, Tex.	1.27
Welsh, La.	.98
Tepetate (La.) (Jan. 4, 1937)	1.12

Duval, Jim Hogg, Webb and Zapata counties, Texas, and Heyser and Placedo fields take Mirando gravity prices. Jennings, La., 5 cents lower than Gulf Coast prices on each degree. Segno, Texas, takes Gulf Refining Co.'s Gulf Coast prices. Choctaw and Darrow, Louisiana, posted for first time by Standard Oil Co. of Louisiana, start below 21 degrees at 90 cents, with 3-cent differential up to 25 gravity, then 2-cent differential up to 40 and above, $1.36. Effective October 1, 1937, Stanolind Oil & Gas Co. in Evangeline, La., pays 92 cents for below 20 gravity, adding 2 cents for each degree upward to 40 and over, at $1.34.

Southwest Texas

(January 28, 1937)

Pettus	1.37
Salt Flat, Darst Creek, Hilbig, Carroll Clark, Zoboroski	1.09
Luling	1.00
Lytton Springs	1.12

Saxet and Taft take same gravity table as Gulf Coast.

North Louisiana and Arkansas

Smackover, all grades	$ .90
Tullos and Urania	1.02
El Dorado East field	.90
Union County, Ark.	.90
Ouachita County, Ark.	.90

Eastern States

TIDEWATER PIPE LINE CO.
(Effective October 12, 1937)

Bradford, Pa.	$2.35
Allegany, N. Y.	2.35

SOUTH PENN OIL CO.
(Effective October 12, 1937)

Pennsylvania Grade Oil in National Transit Lines (Bradford field)	2.35
Pennsylvania Grade Oil in Southwest Pennsylvania Lines	2.05
Pennsylvania Grade Oil in Eureka Pipe Line lines	2.00
Pennsylvania Grade Oil in Buckeye Pipe Line lines	1.85
Corning Grade Oil in Buckeye Pipe Line Co.'s lines	1.27

PENNZOIL CO.
(Effective October 12, 1937)

Pennsylvania Grade Oil in National Transit Lines:	
Group A — Includes Cochran, Franklin, Hamilton and Doolittle districts.	2.35
Group B — Includes Tidioute district.	2.34
Group C — Includes Turkey and Tidioute districts.	2.30
Group D — Includes Bear Creek and Porkey districts.	2.29
Group E — Includes Eldeneau, Bull Creek, Rough Run, Carbon, Dipner, Bredlin, McJunkin, Jameson, Kenerdell, Emlenton, Tiona, Lacey and Kinzua districts.	2.26

Price depends on lengths of pipe line haul to plant at Oil City.

PURE OIL CO.
(Effective October 12, 1937)

Cabin Creek, W. Va.	2.00
Bradford Hollow, W. Va.	2.00
Kelly Creek, W. Va.	2.00

Canada

Ontario (Sept. 9, 1933)*

Petrolia	$2.10
Oil Springs	2.17
Turner Valley, Alberta province (Dec. 16, 1936):†	
Clear naphtha	$2.60
Discolored naphtha, 65 gravity and higher	2.36
Discolored naphtha and crude oil, 40-40.9 gravity	1.88
Increasing 3 cents for each degree of gravity with top price for 64-64.9 gravity	2.27

These prices delivered field tankage.
*Imperial Oil, Ltd.
†Imperial Oil, Ltd., and Regal Oil & Refining Co. On crude oil alone British American Oil Co. posted above prices on December 9, 1936.

Mexico

Panuco*	$1.24

*In U. S. currency, f.o.b. ship, based on August spot market transactions.

Crude Oil Price Changes

The South Penn Oil Co., followed by other buyers in that area, reduced the price of Pennsylvania Grade oil 25 cents per barrel effective on October 12.

Rocky Mountain Runs

Production estimates for the week ended October 9 follow:

	Bbls.
WYOMING	
Salt Creek	16,630
Big Muddy	1,360
Badger Basin	140
Black Mountain	220
Byron	80
Dallas Derby	570
Dutton Creek	50
Elk Basin	60
Frannie	620
Garland	2,690
Grass Creek	510
Hamilton dome	720
Hidden dome	350
Hudson	300
LaBarge	990
Lance Creek	13,100
Lost Soldier	1,390
Medicine Bow	5,310
Mule Creek	140
Midway	10
Oregon Basin	7,840
Osage	720
Pilot Butte	20
Quealy dome	810
Rock River	2,340
South Casper	510
Poison Spider	490
Teapot	20
Wertz	300
Waugh dome	160
Total Wyoming	58,450
MONTANA	
Border	150
Cat Creek	570
Cut Bank	10,330
Dry Creek	260
Kevin-Sunburst	5,160
Pondera	1,710
Total Montana	18,180
COLORADO	
Florence	80
Fort Collins and Wellington	270
Iles dome	2,860
Moffat	430
Orchard	40
Rangely	80
Tow Creek	170
Price	530
Total Colorado	4,460
NEW MEXICO	
Cooper	5,540
Eaves	1,030
Eunice	27,820
Hardy	1,380
Hobbs	16,750
Jal	1,110
Langlie	2,180
Lynch	690
Lynn	300
Mattix	1,900
Monument	29,700
North Lynch	60
Penrose	3,670
Rhoades	120
Skelly	1,570
South Eunice	2,040
Vacuum	80
Artesia-Maljamar	6,820
Getty	200
Hogback	200
Rattlesnake	820
Table Mesa	80
Total New Mexico	104,060
Total Rocky Mountain region	185,150

Crude Prices by Gravities

	1 Oklahoma-Kansas	2 Oklahoma-Kansas	3 North and Central Texas	4 East Central Texas (Mexia district)	5 North Louisiana-Arkansas	6 Gray County, Texas	7 Hutchinson-Carson counties, Texas	8 Rodessa, Louisiana-Texas and Panola County, Texas	9 Conroe, Tomball, Raccoon Bend, Deep, Saturns	10 Gulf Coast	11 Gulf Coast	12 Lea County, N. Mex. West Texas except Pecos County,	13 Mirando district, Texas	14 Marion County, Texas	15 Refugio, Greta, Saxet, Taft, Texas	16 Anahuac, Flour Bluff, Dickson, Turtle Bay	17 White Castle, Louisiana	18 Iowa, Louisiana	19 Cayuga, Texas
Bel. 18	....	....	....	....	....	....	....	....	....	$.90	....	....	....	....	....	....	....	$.90	....
18-18.9	....	....	....	....	....	....	....	....	....	.92	....	....	....	....	....	....	....	.92	....
19-19.9	....	....	....	....	....	....	....	....	....	.94	....	....	....	....	....	....	$.94	.94	....
20-20.9	....	....	....	....	....	....	....	....	....	.96	$.95	....	$.96	....	$1.01	....	.96	.96	....
21-21.9	....	....	....	....	....	....	....	....	....	.98	.98	....	.98	....	1.03	....	.98	.98	....
22-22.9	....	....	....	....	....	....	....	....	....	1.01	1.01	....	1.00	....	1.05	....	1.01	1.01	....
23-23.9	....	....	....	....	....	....	....	....	....	1.04	1.04	....	1.02	....	1.07	....	1.04	1.04	....
24-24.9	....	....	....	....	....	....	....	....	....	1.07	1.07	....	1.04	....	1.09	....	1.07	1.07	....
Bel. 25	....	$.98	....	....	$.90	....	....	$.93	....	....	....	....	....	$.90	....	....	....	....	$.88
25-25.9	....	1.00	....	....	.92	....	....	.95	....	1.10	1.10	$.78	1.06	.92	1.11	....	1.10	1.10	.90
26-26.9	....	1.02	....	....	.94	....	....	.97	....	1.13	1.13	.80	1.08	.94	1.13	....	1.13	1.13	.92
27-27.9	....	1.04	....	....	.96	....	....	.99	....	1.15	1.15	.82	1.10	.96	1.15	....	1.15	1.15	.94
28-28.9	....	1.06	....	....	.98	....	....	1.01	....	1.17	1.17	.84	1.12	.98	1.17	....	1.17	1.17	.96
Bel. 29	$1.06	....	$.96	$1.03	....	....	....	....	$1.20	....	....	....	....	....	....	....	....	....	....
29-29.9	1.08	1.08	.98	1.05	1.00	....	....	1.03	1.22	1.19	1.19	.86	1.14	1.00	1.19	....	1.19	1.19	.98
30-30.9	1.10	1.10	1.00	1.07	1.02	....	....	1.05	1.24	1.21	1.21	.88	1.16	1.02	1.21	$1.16	1.21	1.21	1.00
31-31.9	1.12	1.12	1.02	1.09	1.04	....	....	1.07	1.26	1.23	1.23	.90	1.18	1.04	1.23	1.18	1.23	1.23	1.02
32-32.9	1.14	1.14	1.04	1.11	1.06	....	....	1.09	1.28	1.25	1.25	.92	1.20	1.06	1.25	1.20	1.25	1.25	1.04
33-33.9	1.16	1.16	1.06	1.13	1.08	....	....	1.11	1.30	1.27	1.27	.94	1.22	1.08	1.27	1.22	1.27	1.27	1.06
34-34.9	1.18	1.18	1.08	1.15	1.10	....	....	1.13	1.32	1.29	1.29	.96	1.24	1.10	1.29	1.24	1.29	1.29	1.08
Bel. 35	....	....	....	....	....	$.96	$.91	....	....	....	....	....	....	....	....	....	....	....	....
35-35.9	1.20	1.20	1.10	1.17	1.12	.98	.93	1.15	1.34	....	1.31	.98	1.26	1.12	1.31	1.26	1.29	1.29	....
36-36.9	1.22	1.22	1.12	1.19	1.14	1.00	.95	1.17	1.36	....	1.33	1.00	1.28	1.14	1.33	1.28	1.29	1.29	....
37-37.9	1.24	1.24	1.14	1.21	1.16	1.02	.97	1.19	1.38	....	1.35	1.02	1.30	1.16	1.35	1.30	1.29	1.29	....
38-38.9	1.26	1.26	1.16	1.23	1.18	1.04	.99	1.21	1.40	....	1.37	1.04	1.32	1.18	1.37	1.32	1.29	1.29	....
39-39.9	1.28	1.28	1.18	1.25	1.20	1.06	1.01	1.23	1.42	....	1.39	1.06	1.34	1.20	1.39	1.34	1.29	1.29	....
40,over	1.30	1.30	1.20	1.27	1.22	1.08	1.03	1.25	1.44	....	1.41	1.08	1.36	1.22	1.41	1.36	1.29	1.29	....

Column 1—Companies posting are Barnsdall, Bell, Champlin, Continental, Cushing, Derby, Dickey, Eason, El Dorado, Empire, Falcon, Globe, Gulf, Johnson, Kanotex, National, Phillips, White Eagle, Stanolind, Sunray, Texas, Sun, Vickers and Wilcox.

Column 2—Anderson & Prichard, Carter, Cosco, Deep Rock, Magnolia, Mid-Continent, Pure, Rock Island, Shell, Sinclair, Skelly and Tide Water.

Column 3—All purchasers.

Column 4—Humble Oil & Refining Co. and Sinclair Oil Purchasing Co.

Columns 5, 6, 7 and 8—All purchasers.

Column 9—Humble Oil & Refining Co. and Sun Oil Co. Tide Water Oil Co.'s schedule starts at 35 degrees, $1.34 with 2-cent spread up to 40 and over at $1.44. (Raccoon Bend prices are for deep sand oil.)

Column 10—The Texas Co. (Gulf Refining Co. pays same prices up to and including 34 gravity, but continues its 2-cent spread up to 40 and over at $1.41.)

Column 11—Humble Oil & Refining Co., Sinclair Prairie Oil Marketing Co., Sun Oil Co.

Column 12—All purchasers.

Column 13—All purchasers (effective July 6, 1937).

Column 14—Magnolia Petroleum Co.

Column 15—Humble Oil & Refining Co. (effective July 6, 1937).

Column 16—Humble Oil & Refining Co. prices start at 30-30.9 gravity at $1.16 adding 2 cents for each degree upward to and including 40 and over at $1.36.

Columns 17 and 18—Shell Petroleum Corp.

Column 19—Tide Water Oil Co.

MARKET RECORD, ACTIVE OIL STOCKS

Compiled by Carl H. Pforzheimer & Co., 25 Broad Street, New York City, Member New York Stock Exchange and New York Curb Exchange

New York Stock Exchange

1937 High	1937 Low	Week ending Oct. 9 Sales	Week ending Oct. 9 High	Week ending Oct. 9 Low	Week ending Oct. 9 Close	Stocks—	Total shares outstanding	Par value	Latest dividend	Payable or last paid	Dividends paid in 1936	1936 High	1936 Low	1935 High	1935 Low
114⅞	67½	5,300	76	72	75	Amerada Corp.	788,675	N.P.	50cQ	7-31-37	$2.00	125½	75	80	48½
37	22⅛	10,800	24	22⅛	22⅛	Atlantic Refining	2,664,000	$25	25cQ	9-15-37	1.25	35⅛	26⅝	28	20⅛
43⅜	17⅝	4,400	20⅞	18	18½	Barber Co.	387.149	$10	25c.	6-1-37	.50	38½	21	22½	11¾
35¼	16	48,200	18⅜	16	16	Barnsdall Oil Co.	2,247,974	$5	25cQ	11-1-37	.80	28¼	14⅛	14¾	5⅞
20⅞	8½	49,400	9⅞	8½	9¼	Columbia Gas & Elec.	11,610,036	N.P.	20c	5-15-37	.40	23⅜	14	15¾	3⅝
17⅞	10¾	50,300	12¼	10¾	11⅛	Consolidated Oil Corp.	13,919.417	N.P.	20cQ	11-15-37	.80	17¼	11½	12¼	6½
49	33½	20,400	38⅜	33½	36¼	Continental Oil of Delaware	4,682,615	$5	50cQ†	9-30-37	1.50	44⅞	28⅛	35	15⅛
17⅝	8½	14,500	10	8¾	9⅛	Houston Oil (new)	1,098.618	$25		10-17-30	....	13⅞	6⅜	7	1½
35⅝	21	11,000	25	21⅜	22	Mid-Continent Petroleum	1,855,912	$10	50cSA	6-15-37	1.15	30⅞	17¼	20½	9½
34	18¼	800	20	18½	19	Mission Corporation	1,399,345	N.P.	1.00	6-15-37	.45	29⅞	16¾	17¾	10⅝
41⅜	24	15,900	30⅞	27	28⅛	National Supply of Delaware	382.591	$25		5-15-31	....	75½	19⅞	20⅞	9
22⅞	13⅝	24,000	15⅝	13⅝	13¾	Ohio Oil Co.	6,563,377	N.P.	50cSA	6-15-37	.60	18	12⅛	14¼	9¼
29¾	16	2,500	18⅞	15⅜	15¾	Pacific Western Oil	1,000,000	N.P.	65c	12-18-36	.65	23½	11¾	14	6¾
4½	1¼	600	1¾	1½	1½	Panhandle P. & R.	198,770	N.P.		....	....	4¼	1⅝	1⅞	½
64	45	20,200	50¼	45¼	46⅜	Phillips Petroleum	4,449,052	N.P.	75cQ†	9-1-37	2.50	52⅝	38⅛	40	13¾
29⅞	18	7,700	21⅛	19½	19⅞	Plymouth Oil Co.	1,050,000	$5	35cQ	9-30-37	.90	27¾	11⅞	13	6½
24⅜	13⅜	55,900	15⅞	13⅜	14⅛	Pure Oil Co.	3,281,120	N.P.		9-1-30	....	24⅞	16	17	5⅞
54⅛	26¼	4,100	30	26½	26⅝	Seaboard Oil of Delaware	1,224,283	N.P.	25cQ	9-15-37	1.00	44	30½	36⅞	20¾
34¾	18	10,400	20½	17¾	17¾	Shell Union Oil	13,070,625	N.P.	50c	7-15-37	.25	28¼	14¾	16½	5½
105⅝	99	300	102	99	99	Shell Union Oil 5½% pfd.	343,500	$100	$1.37½Q	10-1-37	28.87½	127½	102	111	63⅛
4¼	3	1,900	3¼	3⅛	3¼	Simms Petroleum	461,698	$10	50c liq.	8-3-37	2.25 liq.	6¾	3½	18¾	4¾
60⅝	34¾	4,400	40⅝	35	35	Skelly Oil	1,006,348	$15	50c	9-30-37	....	47⅜	19½	20½	6½
23¼	16¼	56,000	18⅝	16½	17	Socony-Vacuum	31,151,071	$15	25cSA	9-15-37	.70	17½	12½	15⅜	10⅝
50	34⅛	20,100	36⅛	34⅛	34⅝	Standard Oil of California	13,014,754	N.P.	45cQ†	9-15-37	1.20	47⅝	35	41⅛	27¾
50	36⅝	17,000	40	37½	37½	Standard Oil (Indiana)	15,196,241	$25	50cQ†	9-15-37	2.40	48½	32¾	33⅜	23
36½	30⅝	200	35¼	35¼	35¼	Standard Oil of Kansas	134,841	$10	$1	12-26-36	1.00	31	25	32	20
76	52	34,500	57½	52	53½	Standard Oil of New Jersey	25,856,081	$25	$1.25SA†	6-15-37	2.00	70⅜	51⅛	52⅜	35¾
77½	60	600	62	60	60	Sun Oil	2,156,825	N.P.	25cQ	9-15-37	$1 & 6% Sk.	91	70	77	60½
65⅛	44⅝	51,900	51¼	45¼	46⅝	Texas Corp.	10,896,858	$25	50cQ	10-1-37	1.50	55¼	28⅞	30¼	16½
9⅝	4¼	10,100	4⅞	4⅜	4⅜	Texas Gulf Producing Co.	888,132	N.P.	5c	12-15-36	.05	8⅞	4⅜	4¾	2½
16⅝	9⅝	12,900	11⅛	9⅞	10⅜	Texas Pacific Coal & Oil	888,237	$10	10c	9-1-37	.25	15¼	7½	9¼	3¼
21⅝	15⅜	23,300	17¼	16	16	Tide Water Associated	6,288,512	N.P.	35cQ†	9-1-37	.70	21¾	14¾	15⅞	7⅝
28¼	20	12,300	22¼	20¼	21¼	Union Oil of California	4,386,070	$25	30cQ	8-10-37	1.00	28½	20¾	24	14¾
31½	23¾	1,800	24⅜	23¾	23¾	Union Tank Car Co.	1,200,000	N.P.	40cQ	9-1-37	1.20	31⅝	22⅝	26½	20⅞
6¼	2¾	10,100	3½	3	3⅛	Wilcox Oil & Gas	424,839	$5	....	5-10-28	....	5¼	2¾	3⅛	1

*Ex-dividend. †Includes extras.

New York Curb Exchange

1937 High	1937 Low	Week ending Oct. 9 Sales	Week ending Oct. 9 High	Week ending Oct. 9 Low	Week ending Oct. 9 Close	Stocks—	Total shares outstanding	Par value	Latest dividend	Payable or last paid	Dividends paid in 1936	1936 High	1936 Low	1935 High	1935 Low
21⅜	11⅝	2,500	13¼	11⅝	13¼	Bridgeport Machine Co.	260,000	N.P.	25c	9-30-37	$1.00	21	13¼	14⅛	3¾
51½	45	450	47	46	46	Buckeye Pipe Line Co.	200,000	$50	$1Q	9-15-37	3.25	50	39¾	42½	30½
2¾	1	4,600	1⅜	1⅛	1⅛	Carib Syndicate	799.020	25c			....	4⅞	1⅞	4¼	1⅝
123	98	250	102	98	98	Chesebrough Mfg. Co.	120,000	$25	$1.50Q†	9-30-37	7.00	124¾	105	157	115
5⅜	2	56,000	2⅜	2	2⅛	Cities Service	37,804,394	N.P.	....	6-1-32	....	7⅜	3	3¼	⅝
5½	2⅝	5,700	3⅝	3	3⅛	Cosden Petroleum	399,687	$1	....		....	4½	1½	1½	¼
38¾	23	6,900	27½	23⅞	23⅞	Creole Petroleum	6,974,356	$5	50cSA†	6-10-37	.50	39	19⅞	23¾	10
18⅝	9⅛	2,700	9⅞	9	9⅜	Darby Petroleum	351,390	$5	25cSA	1-15-38	.50	18⅛	9	8⅞	4
8⅝	4¼	1,500	4⅞	4¼	4⅜	Derby Oil & Refining	263.162	N.P.			....	6¾	1⅞	2	⅝
47½	29	No sales	..	..	..	Eureka Pipe Line	50,000	$50	$1Q	11-1-37	4.00	47½	38½	38	33¼
63½	41½	12,200	45¾	41½	44	Gulf Oil Corp.	9,076,202	$25	25cQ	10-1-37	1.50, 100% Stk.	59	36	74¾	50¼
87	67	5,600	70½	67	67⅛	Humble Oil & Refining	8,923,935	N.P.	62½cQ	10-1-37	1.50	80	57	64	44
24¼	18¼	3,000	19¾	19	19⅛	Imperial Oil of Canada	26,919,871	N.P.	62½cSA†‡	6-1-37	1.25	24½	19¾	22½	15⅝
15	7¾	100	9½	9½	9½	Indiana Pipe Line	300,000	$10	50cSA	11-15-37	.80	9¾	5½	6⅛	3⅝
39½	29¾	6,200	32	31	31¾	International Petroleum	14,247,088	N.P.	$1.25†‡	6-1-37	2.50	39⅝	32⅝	39¾	28
15¼	8¼	10,800	9⅜	8⅝	9	Louisiana Land & Exp.	3,000,000	N.P.	10cQ	9-15-37	.50	15⅜	9⅞	11⅜	4⅜
34	16⅛	13,100	26½	22¾	25	Lion Oil Refining	270,000	N.P.	25cQ	10-20-37	.75	17¾	7⅜	8⅛	3½
14⅛	8⅜	3,000	8¾	8⅜	8½	Lone Star Gas	5,382,723	N.P.	20c	8-21-37	.60	14¼	9⅞	10⅞	4½
14⅝	7⅜	1,200	8¼	7¾	7⅞	Midwest Oil Co.	998,444	$10	50c	6-15-37	....	..	..	..	..
7⅞	5⅛	3,000	5½	5¼	5¼	Mountain Producers	1,682,182	$10	30cSA	6-15-37	.60	8⅜	5	5⅜	4⅛
19½	13¾	1,100	14	13¾	13¾	National Fuel Gas	3,810,183	N.P.	25cQ	10-15-37	1.00	23	17⅜	20	11¾
12½	8	600	9	8⅝	8¾	National Transit	509.000	$12.50	45cSA	6-15-37	.75	15¾	9¼	10⅝	6¾
6¼	4¼	No sales	..	..	..	New Bradford Oil	1,445,202	$5	18c	9-17-37	.10	4⅝	2⅞	3¼	2
5	1½	4,200	1¾	1½	1½	New Mexico and Arizona	1,000.000	$1	1c	12-1-36	.01	6⅝	1⅝	2½	1
5⅜	4⅛	No sales	..	..	..	New York Transit	100,000	$5	25cSA	10-15-37	.35	6¼	4¼	4⅞	3
12¾	7½	200	7⅛	7⅛	7⅛	Northern Pipe Line	120,000	$10	40c	6-1-37	.40	9¾	4⅞	8	5¼
9⅝	5	37,000	6¼	5¼	5⅜	Pantepec Oil	1,608,700	N.P.	....	....	....	10½	3¼	4⅜	1¼
13¾	4	1,700	4⅝	4	4⅛	Root Petroleum Co.	336,045	$1	25c	2-1-37	.50	19¼	4½	5	1½
6½	3⅛	900	3½	3⅛	3⅛	Ryan Consolidated	296,931	N.P.			....	4¾	1⅞	2½	⅝
56	41	1,800	43¾	41¼	42¾	South Penn Oil	1,000,000	$25	$1.15Q†	9-30-37	2.60	44	32½	34½	21⅝
7⅛	4⅞	No sales	..	..	..	Southern Pipe Line	100,000	$10	25cSA	9-1-37	.25	7⅞	3¼	5	3⅞
42	26	No sales	..	..	..	South West Penna. Pipe Lines	35,000	$50	50cQ	10-1-37	13.00	60	44	56	44¼
21⅛	18	2,200	18⅝	18	18¼	Standard Oil of Kentucky	2,604,790	$10	40cQ†	9-15-37	1.35	23⅜	17⅛	24	18
13¾	8⅛	300	8¾	8½	8¾	Standard Oil of Nebraska	188.403	$25	25c	3-29-37	.25	14⅝	11	12	7¾
45	27	1,500	29¾	27⅛	28	Standard Oil of Ohio	753,740	$25	25cQ	9-15-37	2.00	40	21¾	23⅝	11½
4⅞	3⅛	7,600	3⅜	3⅛	3⅛	Sunray Oil	1,910,119	$1	10c	8-20-37	.10	5	2⅝	2⅞	⅞
7⅝	4¼	2,300	5	4⅜	4⅜	Texon Oil & Land	336,028	$2	15cQ	9-3-37	.60	9¾	5⅜	6⅞	5

*Ex-dividend. †Includes extras. ‡Payable in Canadian funds.

Note—In comparing highs and lows for the several years in the two tables, it will be necessary to take into consideration cases where there have been stock split-ups.

NEW OR IMPROVED EQUIPMENT

Jackson Electrode-Holder Has Advantages for Light Work

An electrode-holder which on light work combines light weight with maximum conductivity, is easy to handle, and is small enough to be manip-

ulated in tight places is being introduced by the Jackson Electrode Holder Co., 6553 Woodward Avenue, Detroit, Mich. It is said to be particularly efficient on pipe line and tank work and in general maintenance service. The new model, B-4, weighs 15 ounces, has a current capacity of 200 amperes, handles rods one-sixteenth to three-sixteenths inch and is made entirely of Mallory 3 metal. This alloy, according to the manufacturer, insures strength and at the same time has 85 per cent of the conductivity of pure copper. The handle insulation is thoroughly ventilated. Upper tong and compression spring are protected by fiber insulation.

Here and There With Men Who Manufacture Equipment

Appointment of W. R. Persons as manager of its Pittsburgh, Pa., welding sales and engineering office is announced by the Lincoln Electric Co., Cleveland, Ohio.

The oil tool division of Byron Jackson Co. has established a sales and service office at 425 South Fair Street, Olney, Ill., with O. W. Morgan, Jr., in charge.

The Schlumberger Well Surveying Corp. has opened an office at 407 Simpson Building, Ardmore, Okla. C. K. Ruddick is in charge of operations, which will cover southern Oklahoma and North Central Texas.

James M. Kobabe has joined the Lee B. Mettler Co., Los Angeles, Calif., manufacturer of entrained combustion gas burners, as executive general manager. Mr. Kobabe has been affiliated with the company for 11 years as a direct factory engineer, distributing Mettler products in the Central states.

The Tulsa office of the Lufkin Foundry & Machine Co. has been moved to 719 Thompson Building. D. A. Reid is in charge.

The Lucey Products Corp., Tulsa, has made two changes in its sales organization. M. E. Davie has been transferred from Hays, Kans., to Seminole, Okla., and A. D. Jones has been transferred from Hutchinson, Kans., to Hays, Kans.

The following companies have been approved by the Eagle-Picher Sales Co. as distributors for Eagle industrial insulating materials: A. Lynn Thomas Co., Inc., Richmond, Va.; Biggs & Co., Wichita Falls, Tex.; Cleveland Fire Brick Co., Cleveland, Ohio; Darragh Co., Little Rock, Ark.; Donald Sales & Manufacturing Co., Milwaukee, Wis.; Edgar H. Pratt Fire Brick Co., Chicago; L. A. Foster Engineering Co., St. Louis, Mo.; L. R. Land Construction Co., Oklahoma City, Okla.; Lunsford Welding Shop, Inc., Jackson, Miss.; Michiana Fire Brick Co., South Bend, Ind.; Tri-State Mill Supply Co., Fordyce, Ark.; Western Windmill Supply Co., Sweetwater, Tex.; Woare Builders Supply Co., Decatur, Ill.

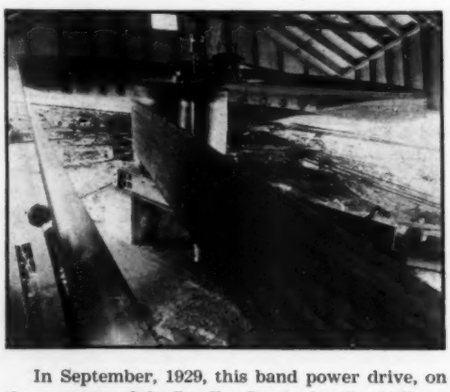
The Hancock valve division of Manning, Maxwell & Moore, Inc.; Bridgeport, Conn., has added Charles Velie and Raymond Heath to its corps of field missionary men. Mr. Velie's headquarters will be in Chicago and Mr. Heath's in Dallas, Tex.

R. R. Davis, formerly apparatus advertising manager of the Westinghouse Electric & Manufacturing Co. has been appointed assistant to the general advertising manager.

Recent appointments of zone representatives have been announced by J. B. Trotman, manager turbine pump division of the Roots-Connersville Blower Corp., Connersville, Ind. W. E. Burke, 24 Tolman Street, Waltham, Mass., will cover all of the New England states. Warren E. Quillman, 1411 Surrey Lane, Overbrook Hills, Philadelphia, Pa., has been assigned to Virginia, Delaware, Maryland, the southern half of New Jersey and the eastern half of Pennsylvania.

Pyramid Manufacturing Co.

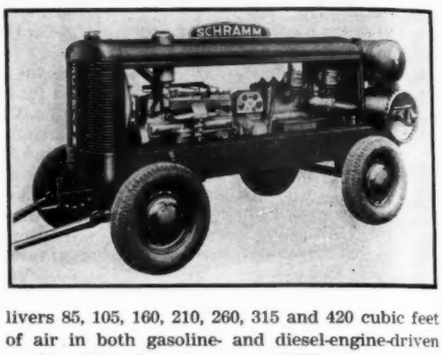
The Pyramid Manufacturing Co. of Houston, Tex., has been organized to manufacture portable water-softeners for drilling purposes, portable condenser heater units for drilling purposes, lime and soda systems, and zeolite water-softeners of every description for use in the oil industry in refining departments, pipe lines, and drilling divisions. Also it will manufacture dry chemical material for water-treating on engine-jackets, condensers and spray-towers, as well as high-temperature paints for hot surfaces. The company officers are W. D. Moore, president and treasurer; A. R. Moberg, vice president, and Glen Green, secretary, all of Houston.



In September, 1929, this band power drive, on the property of the Bradley Producing Co., Bolivar, N. Y., was equipped with a 12-inch, six-ply Goodrich Highflex belt 138 feet long. The drive, which is set at an angle of 22½ degrees, consists of a 20-foot bandwheel equipped with a 14-inch angle idler take-up and is powered by a 30-horsepower Bessemer four-cycle engine. Serving 22 wells, this drive runs 24 hours a day. During the eight years, the power unit has not had to shut down once due to belt failure.

Schramm Puts Line of "Utility" Air-Compressors on Market

The complete "Utility" air-compressor line now offered by Schramm, Inc., West Chester, Pa., de-



livers 85, 105, 160, 210, 260, 315 and 420 cubic feet of air in both gasoline- and diesel-engine-driven models. Weight savings up to 3,500 pounds in the gasoline-powered models and up to 8,000 pounds in diesel-powered are an economy feature.

The straight-in-line cylinder construction is used on all models, together with force-feed lubrication to all seven main bearings. Other features include electric self-starting, self-aligning clutch between compressor unit and motor, mechanical intake valves, discharge valves occupying entire area of head, water-cooled engine and compressor.

These compressors were developed because of the need for a really portable compressor in the construction and excavating fields where the saving in weight in itself represents saving in money. In addition to this weight-saving, the engineers have taken a step forward in an effort to give the user a compressor with features of operation that enable him to do a better job.

Trigger-Action Applicator

A trigger-action belt-dressing applicator is being offered free of charge to belting users by Graton & Knight, Worcester, Mass., leather belt manufacturers. Details of the offer can be obtained direct from the company.

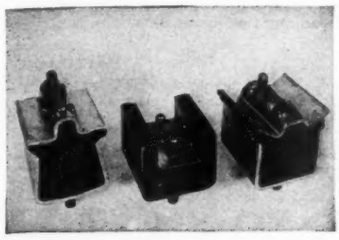
The applicator has been so designed, according to Graton & Knight, that two or three trigger squeezes apply enough dressing for the average belt. It can be used at some distance from moving units, making the dressing operation a safer one. Application is made evenly and in small quantities, helping to avoid wasteful overdressing.

"Serving the Oil Industry"

Fresh realization of the importance achieved by the oil equipment supply business is afforded by an attractively printed 20-page booklet offered by the Bridgeport Machine Co., Wichita, Kans. The booklet, "Serving the Oil Industry," follows the supply service from the crude drilling tools provided by Uncle Billy Smith for Colonel Drake's venture at Titusville, Pa., to the scientifically engineered appliances for 12,000-foot wells. Facts about the part Bridgeport has played in this development are given, along with interesting pictures.

Metal Turns Inside Out Before Its Bond to Rubber Is Torn

The bonding of rubber to metal so firmly that the metal actually turns inside out before the bond tears loose, is illustrated by this test conducted in



the laboratories of United States Rubber Products, Inc., New York. A rubber mounting (center) was held firmly in a testing machine while a clamp gripped the two bolts located in the channel. Tremendous pull was exerted with the result pictured. At the left, the channel has been pulled inside out, although the rubber bond still holds. At the right, the bolt was pulled out while the rubber still clings tenaciously to the metal plate.

Cooper Goes to South America

Harold E. Cooper, for the past several years sales manager in the eastern division for Fred E. Cooper, Tulsa, left September 29 for an extended trip in South America, where he will make deliveries on Allis-Chalmers well-servicing units in various oil fields. He will spend some time in the Argentine, with Buenos Aires as headquarters. Later in the fall he will be joined by Fred E. Cooper, head of the organization, which has exclusive sales and service of Allis-Chalmers wheel-type winch tractors, skid-winches, and power engines for oil-field work.

Bulletins, Booklets and Other Literature for the Trade

An improved compressor unit, of the horizontal, gas-engine-driven type, is described in a bulletin issued by the Cooper-Bessemer Corp., Mount Vernon, Ohio. This new unit, of either single- or twin-cylinder design, is designated as "type 12."

How the Wiggins balloon system serves 14 tanks at the McPherson, Kans., refinery of the Globe Oil & Refining Co., is told in the current issue of the Water Tower, published by the Chicago Bridge & Iron Co., Chicago. The cover page shows the Warren Petroleum Co.'s Horton-spheroids for storing natural gasoline at Port Arthur, Tex.

A revised edition of the booklet, "Haynes Stellite Products in the Oil Fields" published by the Haynes Stellite Co., unit of Union Carbide & Carbon Corp., Kokomo, Ind., describes the procedure for hard-facing and hard-setting oil-well bits with Haystellite.

A six-page, illustrated bulletin on Adsco water heaters for industrial and institutional installations is available by addressing the American District Steam Co., North Tonawanda, N. Y.

Demag Aktiengesellschaft, Duisburg, Germany, has issued an illustrated 200-page cloth-bound book describing its various products, which include drilling equipment, compressors, gas engines, welded vessels, cranes and other appliances for use in the oil and allied industries. The Seamless Steel Corp., New York, is the company's United States agent.

Engineers, superintendents and maintenance men responsible for pipe line maintenance will be interested in the new "Pipe Repair Handbook," published by M. B. Skinner Co., South Bend, Ind. It discusses all the various kinds of leaks in pipe lines and tells how repairs may be made without service interruption. The handbook is furnished without cost to men responsible for pipe maintenance.

The Bradford Motor Works, Bradford, Pa., manufacturer of oil-well supplies, has published a sheet in three colors on B-M-W balls and seats. It gives detailed information on the six B-M-W leading types, Chromard, Monarch, Bramo, Lumonel, Bi-Metal, and Extrard bronze.

The Brown Instrument Co., Wayne and Roberts Avenues, Philadelphia, Pa., has published a new catalog on Brown pyrometers (potentiometer type). It covers the complete line, indicating, recording and controlling, and includes the new Brown Electr-o-Line controllers and the proportioning control system.

A preliminary bulletin of 12 pages, covering standard seamless shrink-thread drillpipe and tool-joints has been issued by Spang, Chalfant & Co., Inc., Pittsburgh, Pa.

The current number of the Electric Dehydrator, published by the Petroleum Rectifying Co. of California, Security Title Insurance Building, Los Angeles, is designated as a special desalting issue.

Specific speed limits for centrifugal pumps are discussed in the current issue of the Byron Jackson News Letter (Pump Division), Berkeley, Calif.

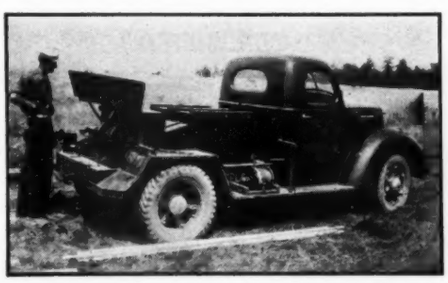
American Now In Great Bend

The American Iron & Machine Works Co., Oklahoma City, has opened a machine shop and warehouse in Great Bend, Kans., equipped with machinery specially selected for the territory served in this Kansas field. The plant is under the supervision of R. E. (Bob) Craine, formerly in charge of the Seminole, Okla., shop. The company now has branches in five of the major oil-producing states.

Well Shooting in Pennsylvania

The truck shown in the accompanying photograph is one of four Model D-30, 1½-ton Internationals recently purchased by Otto-Cupler Torpedo Co. of Titusville, Pa., from International Harvester Co., Chicago. The D-30 is one of a number of units in the recently announced International "D" line.

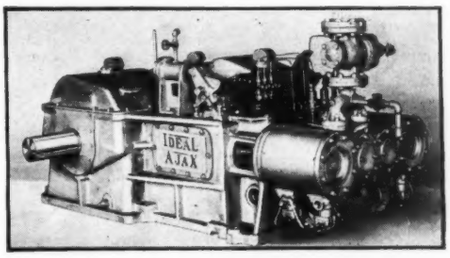
Excepting the winch, all equipment on the new truck was made by Otto-Cupler; the body being of



sheet steel without crevices or cracks which might contain nitroglycerin. An old-style, hand-operated reel is on the running-board and is used in places inaccessible to the truck. The unit shown is lowering a shot of nitroglycerin into a well by winch line.

Ajax Introduces Twin-Cylinder Steam Engine of New Design

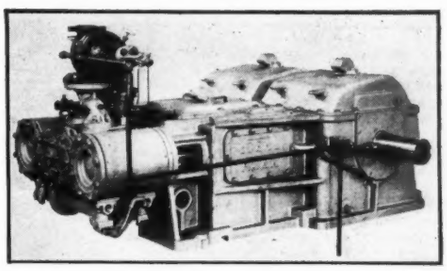
The Ajax Iron Works, Corry, Pa., has announced horizontal-type twin-cylinder steam engines of new design, available in 7-, 8- and 9-inch



Reversible drive engine

cylinder-bore by 8-inch stroke. Applications include: Direct drives to rotary (engine located above or below derrick floor); direct drives to mudpumps by means of V-belts or chain; dual engine hookup for driving rotary or mudpump and for hoisting pipe.

For rotary machines these engines offer a compact and economical drive. Direct rotary drive type A (above floor) is a self-contained enclosed unit. The drive to the rotary pinion-shaft extension is through an enclosed lubricated chain. A sprocket on the rotary shaft extension gives an emergency drive to or from the drawworks. The type B (below floor) allows for more clear derrick floor space. For this drive the engine is placed beneath the derrick floor and connected to an extension shaft, which carries two clutch-



Ajax 9x8 pump drive Ideal twin-cylinder engine

sprockets, one for direct drive to the rotary and one for emergency drive to the drawworks. These drives eliminate need for a separate standby engine.

For driving mudpumps, great savings in steam consumption can be obtained by driving power pumps with these small engines. As regularly furnished for separate mudpump drive the engines are nonreversing.

Dual engine drive consists of two engines mounted on a skid carrying all clutches, bearings and couplings. When drilling one engine drives the slushpumps, one the rotary, and while making a round trip the power of both is available.

The engine specifications include one-piece completely enclosed frame, lagged and jacketed cylinders, piston steam valves, automatic cylinder relief valves, heavy forged double extension crankshaft, tapered roller shaft-bearings, bronze back babbitt-lined crankpin boxes, metal rod packings, heavy forcefeed cylinder and valve lubricator, adjustable cutoff on reversing engines.

C. B. Martin Now Sales Manager

Chris B. Martin has been made sales manager for the Jarecki Manufacturing Co. with headquarters in Tulsa, Okla. Mr. Martin for 11 years represented Jarecki at its Pampa, Tex., store. He has had 22 years experience in the supply business and will reside in Tulsa in a newly purchased home. He succeeds the late Walter B. Gray.

Oil Man's Calendar

October

14-16—Pittsburgh, Pa., mid-year meeting, American Association of Petroleum Geologists, William Penn Hotel.

14-15—Houston, Tex., Interstate Oil Compact Commission, Rice Hotel.

14-16—Houston, Tex., Independent Petroleum Association of America, annual meeting.

18-22—Atlantic City, N. J., American Welding Society, Eighteenth Annual Meeting and Welding Exposition.

26—Shreveport, La., Louisiana-Arkansas division, Mid-Continent Oil and Gas Association, membership meeting Slattery, Building.

27-28—Indianapolis, Ind., Indiana Independent Petroleum Association, Annual Fall Convention, Hotel Severin.

28—New York, S.A.E. Annual Dinner, Commodore Hotel.

29-30—Dallas, Tex., Mid-Continent Oil and Gas Association of Texas, annual meeting.

October—November

27-Nov. 3—New York, National Automobile Show, Grand Central Palace.

November

8-12—Chicago, American Petroleum Institute, Eighteenth Annual meeting, Stevens Hotel.

16—New York, Oil Trades Association of New York.

19—Tulsa, Mid-Continent Oil and Gas Association membership meeting, Tulsa Club.

December

6—Memphis, Tenn., National Asphalt Congress.

6-11—New York, Exposition of Chemical Industries, Grand Central Palace.

8-10—Flint, Mich., S.A.E. National Production Meeting.

14—Tulsa, annual meeting of directors of Mid-Continent Oil and Gas Association.

1938—March

16-8—New Orleans, twenty-third annual meeting, American Association of Petroleum Geologists, Roosevelt Hotel.

CLASSIFIED ADVERTISING

Leases and Drilling Blocks

NEW Texas Oil and Gas Leases. Large or small tracts for brokers and salesmen. State requirements. H. H. WHITE, P.O. Box 674, San Antonio, Texas.

SECURITY ABSTRACT COMPANY
El Dorado, Arkansas
Fee, Lease & Mineral Ownership
on short notice. Ownership maps.

ILLINOIS

A complete weekly report on Illinois operations.
One month.....$5.00
Six months.....$25.00
Sample report on request.
OIL NEWS SERVICE
P. O. Box 148 Flora, Illinois

ARKANSAS
Does not have any production (proration) restrictions. The opportunity for quick "payouts" is obvious. Come here and investigate royalty and lease opportunities.
WILLIAM MONROE LAYTON
P. O. Box 411 Texarkana, Ark

CAN FIND any oil structure that will produce when penetrated. P. O. Box 303, Tonkawa, Oklahoma.

WANTED—Proven or semiproven lease or shallow deposits for immediate drilling. Box H-995, The Oil and Gas Journal, Tulsa, Oklahoma.

HAVE 17,000-acre block that is believed over subsurface structure but will take geophysical survey to determine. Will make any reasonable deal with responsible party to develop. Address W. M. PRATHER, Oakley, Kansas.

New Mexico OIL LEASES WHOLESALE
40 acres at a time.
Roy G. Barton, Clovis, New Mexico

FOR SALE or exchange—Producing and distributing natural gas properties in western Missouri and eastern Kansas. Fine condition. Great development possibilities. Exchange for producing oil wells acceptable. LOUIS C. CYR, 45 Melrose St., Lawrence, Massachusetts.

Specializing leases twenty acres up dollar acre, East Tex., La., S. Ark. Owners—Attorney, Box 1122, Little Rock, Arkansas.

WEST TEXAS Permian and Delaware Basin oil leases at $1.00 and $2.50 per acre, also Jones, Fisher and Taylor county leases at low prices. MIESSE, P. O. Box 1152, Abilene, Texas.

WE ARE interested in drilling propositions on proven acreage. If you have any such acreage please submit to Box H-994, The Oil and Gas Journal, Tulsa, Okla.

Illinois Oil and Gas Leases
J. R. WINN, REAL ESTATE OFFICE
Mt. Vernon, Illinois.

FOR SALE—Yoakum Co. Tex. lease on alleged seismograph high just ahead of production. Favorable drilling site 2 miles long consisting South half Sec. 596 and 597 for $20 per acre, bonus dollar delay rental.
DR. J. A. ROBINSON,
Veterans Adm., Los Angeles, Cal.

FOR SALE—160 acre lease, one well producing seven barrels a day. Bartlesville sand. Southwest Quarter of 15-19-7, Creek County, Oklahoma. L. R. KERSHAW, Muskogee, Oklahoma.

FOR SALE, leased drilling blocks in Colorado, Nebraska and Kansas, reasonable. Address Box H-980, The Oil and Gas Journal, Tulsa, Oklahoma.

Leases and Drilling Blocks

WANTED — KANSAS DRILLING BLOCK. Address Box H-996, The Oil and Gas Journal, Tulsa, Oklahoma.

FOR SALE Oil producing leases with many locations yet to drill, leases for sale near production and wildcat leases for drilling contracts.
W. P. HARLEY
Bowling Green, Ky.

OWNER wishes to lease in Montana 320 A. E½ 29-35-13 Hill county and 160 A. NE¼, 24-33-4 Toole county, also 140 A. White county, Ill.
S. HOMAN
7205 Exchange Ave., Chicago.

320 A. PROVEN GAS. ⅛ working interest. Unlimited 8-cent market. I complete one well and assign all for $1,500.00. H. B. Suddenborg, Osawatomie, Kans.

WILL BUY PRODUCTION—Shallow. Confidential. Box H-997, The Oil and Gas Journal, Tulsa, Oklahoma.

Geophysical Service

OIL LOCATING SERVICE

Proposed locations checked and prospective areas surveyed by proven geophysical method oil location.

P. O. Box 1528
Tulsa, Oklahoma

Royalties

FOR SALE—Royalty under and around well SW¼, 26-27-22 Ford County, Kansas. Also blocks and leases. Geo. Rickard, Bucklin, Kansas.

INVESTORS having Royalty or Leases for sale or trade write W. M. ADAMS, Clarksville, Texas.

Royalties

Brokers—Salesmen

Sell in the most active area in the United States—The Permian Basin of West Texas and Southeastern New Mexico. From the standpoint of royalty investors this area has much to offer. Can supply you with choice non-producing royalties located on geophysical highs. Also drilling blocks, close in acreage to production, or wildcat leases. I maintain my own field men who cover this area for me. All offerings meet the requirements of the Security and Exchange Commission. Inquiries invited.

B. D. BUCKLEY

Paul Brown Bldg., St. Louis, Mo.

PRODUCING OIL ROYALTIES
15 years of experience.
L. H. WITWER
214 Kennedy Bldg., Tulsa, Okla.

F. A. SANSOME

Maintains a Complete Trading Organization for Brokers, Banks and Dealers
In
Oil Royalties.
522 Fifth Avenue, New York, N. Y

Royalties

Oil Royalties and Oil and Gas Leases
Bought and Sold
E. T. Marion
1109 Petroleum Building
Midland, Texas.

ANDREW J. BARRETT
The Philtower
Tulsa, Oklahoma.

DEEDED—N.W. Oklahoma oil royalties and leases, near drilling wells or hot spots. I will make U $. Small commission. ENID OIL ROYALTY CO., Enid, Oklahoma.

119 million ft. gasser in Sec. 10-9-25, Beckham County, Okla. Royalties within 1½ miles and closer to well. $50 per acre and up. Also choice leases. J. N. SWANSON, Sayre, Oklahoma.

NEW MEXICO Oil and Gas Leases and royalties. Send 50 cents in stamps for new State Oil Map of New Mexico. Roy G. Barton, Clovis, New Mexico.

Oil Royalties and Leases Illinois Basin.
Write
Sam B. Raitman Olney, Ill.
226½ Main St. P. O. Box 229

REPRESENTATION WANTED for Calif. Oil Royalties. California Oil Syndicate, Inc., 1541 N. Western, Los Angeles, Calif.

Financing

CAPITAL raised for development of Oil and Mining properties. Delaware Charters. J. B. Murrow, 299 Broadway, New York.

OIL AND GAS FINANCING WANTED

for development of tested fields. Drilled four wells all producing on 1,500 acres controlled leases.
Box H-946, The Oil and Gas Journal, Tulsa, Okla.

CAPITAL SEEKERS—Put your project before 260 Key-Men. Cost trifling. Details free. AMSTER LEONARD, Fox Theater Building, Detroit, Michigan.

WANTED—Form contact with reliable underwriter or broker with established clientele, capable underwriting substantial spread acreage at wildcat prices, sufficient to pay for drilling first well on Texas and Louisiana assembled drilling blocks. Acceptable references. OIL DEVELOPER, Drawer 1135, Dallas, Texas.

Oil Industry Printing

OIL FIELD LEGAL BLANKS
Leases, assignments, releases, township plat books, well records, etc. Request on your letterhead gets free catalog. Olds Press, 215 East Third St., Tulsa, Okla.

Business Opportunities

WHO wants to market the king of all derricks? No more pulling in. Most needed thing today. Correspondence invited. Address Box H-991, The Oil and Gas Journal, Tulsa, Oklahoma.

GOOD oil prospects. Wells drilled. 8 scenic large lots on knoll, finest view ocean, bay, mountains, fine groves, fish, game. $200 each. $25 down, $5 monthly. NUTMAN, Route 1, San Luis Obispo, Calif.

Mailing Lists

ROYALTY INVESTORS, by deed. Speculators in low priced leases. Both by states. Oil Industry Mailing List Co., Tulsa Loan Building, Tulsa, Oklahoma.

CLASSIFIED DISPLAY RATES

Classified Display is set with a border and may be used in one or two column sizes.

1 Inch	1 time	$5.00
1 Inch	13 times	4.50 per inch
1 Inch	26 times	4.00 per inch
1 Inch	52 times	3.50 per inch

This space may be contracted for over a period of one year from the date of the first insertion and is PAYABLE IN ADVANCE, MONTHLY.

CLASSIFIED

Classified advertising rates: First insertion, 35 cents a line; each additional insertion, 25 cents a line, PAYABLE IN ADVANCE. Six words usually make a line. Count as a word each one-letter word and each group of figures. White-space computed at regular line rate. Allow two extra lines for blind ads. Ads of less than three lines not accepted. No formal acknowledgement is made, and proofs cannot be shown in advance of publication.

	1 time	2 times	3 times	4 times		1 time	2 times	3 times	4 times
3 Lines	$1.05	$1.80	$2.55	$3.30	7 Lines	$2.45	$4.20	$5.95	$7.70
4 Lines	1.40	2.40	3.40	4.40	8 Lines	2.80	4.80	6.80	8.80
5 Lines	1.75	3.00	4.25	5.50	9 Lines	3.15	5.40	7.65	9.90
6 Lines	2.10	3.60	5.10	6.60	10 Lines	3.50	6.00	8.50	11.00

We reserve the right to withhold all advertising of questionable character. To avoid delay be sure to send remittance with copy. We will set your ad in the smallest amount of space possible and refund all overpayments. One-time insertions will not be run until fully paid. Forms close MONDAY NOON before each issue date.

THE OIL AND GAS JOURNAL
Tulsa, Oklahoma